

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 731.—VOL. XIX.]

London, Saturday, August 25, 1849.

[PRICE 6D.

### Greenwich Hospital—Sale of Lead Ore.

THE COMMISSIONERS OF GREENWICH HOSPITAL will RECEIVE TENDERS for the PURCHASE of EIGHT HUNDRED BINGS of LEAD ORE, at the Low Bays Inn, Alston, up to One o'clock in the afternoon of Thursday, the 6th day of Sept., 1849.—Samples of the ore will be forwarded to any parties wishing to purchase, who may not appoint agents to examine them, on application to Mr. Paul, Alston, Cumberland; and conditions of sale may be had on application to Mr. Gray, at the Greenwich Hospital Office, Dilston, Newcastle-on-Tyne.

### WEST OF SCOTLAND MALLEABLE IRON-WORKS, AND LANDS OF BRAIDHIRST AND MILTON.

TO BE SOLD, BY PUBLIC ROPU, within the Royal Exchange Sale Rooms, on Wednesday, the 29th day of August, 1849, at One o'clock in the afternoon.

#### MALLEABLE IRON-WORKS.

These large WORKS, belonging to the West of Scotland Malleable Iron Company, situated at MOTHERWELL, in the parish of Dalsie, and county of Lanark, consisting of REFINERY FIRES, FORGE, HAIL, ROLLING, SLITTING, HOOP, PLATE, and SHEET MILLS;

And, with a little further outlay, capable of producing about 600 tons finished iron weekly. These works, which have been erected on the most approved plan, have been in operation since May, 1847; and, besides rails, can be made to turn out all the sizes and varieties of iron usually required by the trade.

There are on the ground one blowing engine of about 80-horse power for refineries, two forge and two mill engines, condensing and that work expansively, each about 100-horse power. Between the mill engines there is a small subsidiary high-pressure engine, of about 40-horse power, for driving the guillotine mills. There are likewise one lathe and one pumping high-pressure engine, each about 20-horse power. All these engines, with the exception, are in first-rate working order.

Attached to the works are smelters, wroughts, and fitting-up shops, with turning lathes, cranes, &c., complete. Also, offices, stables, mill manager's house, and 98 workmen's houses, besides ample accommodation in the village of Motherwell, immediately adjoining. These works are most favourably situated, being surrounded by coal and pig-iron works; and, as the Caledonian Railway forms one of the boundaries of the works, railway communication to all parts of the kingdom is afforded; and the works have a direct communication with the Harbour of Glasgow, distant 10 miles, by the Clydesdale Junction Railway. Upset price, £4,500.

#### LANDS OF BRAIDHIRST AND MILTON.

These lands, situated in the parish of Dalsie, and county of Lanark, lie contiguous, and extend in all to 390 acres, or thereabouts, but from that half to be deducted about 30 acres, set apart for the Malleable Iron Works, to be held under Feu; and about 20 acres occupied by the Village of Motherwell, also held under Feu—leaving about 340 acres to be disposed of, together with the Feu-Duties exigible from the portions feued as aforesaid, which Feu-Duties amount to nearly 300/- per annum.

The lands are most advantageously situated, being bounded on the south-west side by the turnpike road from Glasgow to Lanark, on the south-east by the turnpike road from Edinburgh to Hamilton, and on the north-east, north, and north-west sides by the River Calder; and being intersected by the Wishaw and Coltness Railway, now forming part of the Caledonian Railway, easy access and communication is afforded to all parts of the kingdom.

There is an excellent Farm-Steadings on the lands, with Out-Houses and Cottars' Houses, sufficient for a large farming establishment; and, having been for some years in the hands of the proprietors undergoing improvements, the lands are in the best condition.

The lands contain MINERALS, and the purchaser will obtain right, not only to the minerals in the Untenanted lands, but also to a large portion of those under the Feued Ground. The Coal has been wrought at a moderate depth for more than 12 months, for the supply of the Malleable Iron Works, and has been proved to be of excellent quality.

It is proposed to reserve to the Proprietors of the Malleable Iron Works a right to Feu about ten acres of additional ground, adjoining their works, at the rate of £6 per acre, (exclusive of Minerals, however), provided the option is exercised within a specified period. Upset price, 35,000/-.

For further particulars, application may be made to Lawrence Hill, jun., at the works at Motherwell; James Anderson, at the company's office, 88, St. Vincent-street; or to Knockriff, Paterson, and Forbes, 45, West George-street, Glasgow, in whose hands are the title-deeds and articles of roup, and plans of the property.

Glasgow, 21st July, 1849.

### EXTENSIVE IRON-WORKS FOR SALE, BY PRIVATE BARGAIN, THE BLAIR IRON-WORKS.

Belonging to the Ayrshire Iron Company, with the whole MINERAL FIELDS held by the said company, under favourable leases, including the MALLEABLE IRON-WORKS, immediately adjoining, so far as erected—all as particularly described in former advertisements.—There is a large STOCK of IRONSTONE on the ground, which may be had at a valuation.

For further particulars apply to Mr. Biggart, at the works; Mr. Watson, 32, and Mr. Brown, 35, St. Vincent-place, Glasgow; Messrs. McDonald and Mackenzie, accountants, there; Messrs. Gimson-Craig, Dalsie, and Brodie, W.S., Edinburgh; or Messrs. Montgomerie and Fleming, writers, Glasgow—the last being in possession of the title-deeds.

Glasgow, June 20, 1849.

COAL.—TO BE SOLD, OR LET, either in one or more lots, all that valuable VEIN of COAL, commonly called the UPPER MOUNTAIN MINE, extending over about 1000 acres—situate in the township of GREAT HARWOOD, in the county of Lancaster. The mine has been recently proved, and found, at 77 yards from the surface, to be 5 feet in thickness, and of an excellent quality. The above property is within a short distance of the Leeds and Liverpool Canal, and in the midst of a populous and large manufacturing district.

A section of the borings may be seen by applying to Mr. Boosey, Rufford Hall, Ormskirk; or to Mr. Whittle, Charnock Richard, Chorley—to either of whom proposals may be sent.

### VALUABLE AND EXTENSIVE MINES OF COAL AND IRONSTONE.

TO BE LET, ON LEASE, on most advantageous terms, the COAL and IRONSTONE under a very large tract of land, in the parish of RUABON in the county of DENBIGH, adjoining the Shrewsbury and Chester Railway.

The proprietors of the ESTATES on which the Ponkey and Aberdovey Iron-Works were formerly carried on, have made arrangements to LET BOTH PROPERTIES TOGETHER, which will give the lessee of them facilities to carry on a lucrative business very rarely to be met with.

The COALS and IRONSTONE on these ESTATES may be raised at very much less than an average cost, and the quantity proved in them (besides what are under a very large portion of one of them, in which there is no doubt they will be found) is estimated will supply iron-works with materials to make 400 tons of pig-iron weekly for upwards of 30 years, as well as 50,000 tons of the much and justly-celebrated Yard and Wall and Bench Coals per annum for sale, for the same period.

Printed particulars of the property, and lithographed plans of the estates, showing the minerals under them, with calculations as to the expense of making iron from them, as compared with that of manufacturing it in Staffordshire, may be had upon application at the office of the Mining Journal, 26, Fleet-street; and at J. Boydell's, 54, Threadneedle-street, London; and at Messrs. Longeville and Williams, solicitors, Oswestry.

Oswestry, June 6, 1849.

MINES IN FLINTSHIRE.—TO BE SOLD, BY PRIVATE TREATY, by order of the trustees of the late William Williamson, Esq., of Greenfield, SHARES in the following valuable and well-known MINES, in the county of Flint:—viz., MALAROGH, HENDEE, TALACRE, NANT, and PARRY'S MINES (HALKIN).—Most of the above mines are so celebrated, and have been so long established, that it is unnecessary to add a word in support of their claim to public attention.

ON SALE also, BY PRIVATE TREATY, a MOIETY of the COAL and MINERALS under about TWENTY-EIGHT ACRES of LAND, in GWESPYR, in the parish of LLANASA, now in the occupation of — Jones, Esq.

For information and particulars apply to Mr. Williamson, solicitor, Pendre, Holywell; Mr. Williamson, solicitor, Wall-street, Holywell; or to Mr. E. H. Williamson, Greenfield, near Holywell, Flintshire.

### TO THE OWNERS OF COLLIERIES, MINES, PLANTATIONS, SAW-MILLS, &c.

IMPROVED CIRCULAR SAWS, MILL-SAWS, FILES, Machine Irons, and Cutting Knives, Steel in Blister, Bar, Cast, Shear, and Drift Steel, Springs for Railways and Common Roads, Iron Washers, Bolts, Hammers, &c., on the most perfect and economical principles, manufactured with dispatch, by BLAKE AND PARKIN.

THE MEADOW STEEL-WORKS, SHEFFIELD.

TO ENGINEERS AND BOILER MAKERS.—The BIRMINGHAM PATENT IRON TUBE COMPANY MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotives, and all Traction Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.

WORKS—Smeethwick, near Birmingham.

LONDON WAREHOUSE—No. 6, Upper Thames-street.

WIRE ROPE.—The Undersigned beg to inform the public, that they have become SOLE LICENSEES of Mr. ANDREW SMITH, for the MANUFACTURE and SALE of his PATENT WIRE ROPE; and having fitted their premises with his very superior improved machinery, have only to assure those who may favour them with their orders, that the same care and attention shall always be bestowed which they have reason to believe, has secured them such general support.

LIGHTNING CONDUCTORS, SIGNAL CORD, and SASH LINE, all in stock.

Patent Wire Rope Works, No. 39, High-street, Wapping, London.

### JAMES BOYDELL, LAND, MINE, AND MACHINERY VALUER, AND AGENT.

No. 54, THREADNEEDLE-STREET, LONDON.

HAS TO DISPOSE OF

Several PATENT RIGHTS, FREEHOLD ESTATES, LEASES of FOUNDRY and ENGINEERING WORKS, FREESTONE QUARRY, and COAL and IRONSTONE MINES. SHARES in a well-known SLATE QUARRY, the PART, or the WHOLE, of a well-established GAS WORK, and STEAM-ENGINES and MACHINERY of all descriptions.

TO ENGINEERS, BUILDERS, AND ARCHITECTS.

JAMES BOYDELL, 54, THREADNEEDLE-STREET, having been a very large manufacturer of machinery and irregular shaped iron, and having accomplished the rolling of some descriptions of the latter, thought by many to have been impracticable, will be happy to ASSIST any ENGINEERS, SHIPBUILDERS, and ARCHITECTS, in the planning of the details of what IRONWORK they may have occasion for, or bringing to perfection any invention in machinery, as well as procuring such materials for the purpose as they may require.

### DUISBURG IRON-WORKS AND MINES, IN WESTPHALIA, CLOSE TO THE RHINE.

Managed in England according to the principles of the "Cost-book System," and in Prussia as a Société in Commandite, under laws limiting the liability of the shareholders to their personal subscription.

Company's Offices, 28, Moorgate-street, City.

### INDURATED AND IMPERVIOUS STONE, CHALK, &c.

—AGENTS, with capital, are WANTED in all TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISON'S MATERIALS—hard as granite, imperious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.

Apply to HUTCHISON & CO., East Temple Chambers, London, or Tunbridge Wells, Kent, stating name, address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.

LICENCES GRANTED.

### AMHEROO WHEAL MARIA MINE.—At a General Meeting of the adventurers in the above mine, held at the offices, King-street, on Thursday, the 23rd instant.

PETER DAVEY, Esq., in the chair.

The circular of the purser convening the meeting was read by the secretary, James Crofts, Esq.

After the confirmation of the previous minutes, the balance-sheet was submitted, showing the liabilities of the mine to the end of June, £366 3s., and the assets (some of which doubtful), £543 19s. 2d.—leaving a balance in favour of the mine of £177 16s. 2d.

The shares in arrear of the last call, due 10th May, being reduced to a very small number, it was

Resolved.—That 15 days further time be given to each shareholder to pay the said call; and if not paid within the said date, the shares to be absolutely forfeited.

A report from the committee (a copy of which will be found in another column of the journal) was submitted; it was also

R resolved.—That the second instalment of 10s. per share, out of £1 per share, made on the 5th April last, be now called, and payable on or before the 23rd Sept. next.

The usual vote of thanks was passed by acclamation to the chairman, for his unremitting attention to the interests of the mine.

JAMES CROFTS, Secretary.

### BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, BIRMINGHAM.—THE EXHIBITION OF WORKS OF MANUFACTURES AND ART, in connection with the ensuing General Meeting of this Association will be OPENED at BINGLEY-HOUSE, BROAD-STREET, BIRMINGHAM, on MONDAY, the 3d of September next.

The EXHIBITION will consist of SPECIMENS of ARTICLES of UTILITY and ORNAMENT, in METALS, WOOD, and WOVEN FABRICS, MODELS of MACHINERY, and SCIENTIFIC APPARATUS, AGRICULTURAL IMPLEMENTS, and some INTERESTING PROCESSES of MANUFACTURE in OPERATION.

Members and associates of the Association will have free admission.

The public will be admitted on payment of One Shilling each person. Season tickets Five Shillings each.

Open from Ten A.M. until Ten P.M.

ALL CONTRIBUTIONS intended for the Exhibition must be forwarded immediately, addressed to the Exhibition Committee, Bingley House, Birmingham.

The carriage upon all articles which are accepted will be paid both ways by the committee, who will also insure the articles against fire; the committee cannot, however, hold themselves responsible for any damage which may occur to the contributions, in transit or in the exhibition, but the utmost care will be taken of them.

WESTLEY RICHARDS, Chairman.

W. P. MARSHALL, Honorary Secretary.

GEORGE SHAW, 3 Secretaries.

BIRMINGHAM, August 15, 1849.

### STRUVE'S PATENT MINE VENTILATOR. TO COLLIERY PROPRIETORS

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

No injury to pumps, tubing, chains, ropes, or pitwork.

Groves kept clear.

Not influenced by barometrical and thermometrical changes in the atmosphere, or by wind.

Current of air undeviating.

LICENCES will be GRANTED on application to

MR. WILLIAM PRICE STRUVE, C.E., Swansea.

The ventilator has been erected at the Eaglesbush Colliery, near Neath, and is perfectly efficient, and may be viewed on application to the proprietors, Messrs. Penrose and Evans, Neath.

15

### CWMBRAIN PATENT IRON REFINERY.—THE PROPRIETORS OF IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of MR. BLEWITT'S REFINED IRON, or METAL, PREPARED by a NEW PATENT PROCESS,

whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from the worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required.

THE PATENT METAL is PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:

1. For BOILERS and TANK-PLATES.

2. For TIN-PLATES, commonly called COKE-PLATES.

3. For STRONG CABLE BOLTS, RIVET, and ANGLE IRON.

This COMPOUND PUDDLED, beat under the hammer into a bloom, reheated, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind, or iron used for that purpose. It is also well adapted for nail-rods, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B."

and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

SMOKE NUISANCE.—TO ENGINEERS, MANUFACTURERS, MILLOWNERS, and OTHERS USING STEAM BOILERS.

### COLLINS'S PATENT STEAM BOILER APPARATUS

SAVING OF FUEL GREAT (fall 20 per cent.)

GENERATING STEAM UNEQUALLED.

ADJUSTMENT in use SETTING of BOILERS, and cost of apparatus and fixing trifling.—Also,

WATTEAU'S PATENT FOR PREVENTING INCrustATION in BOILERS, now used extensively, and with the best results.

References given, and plans forwarded, on application to James Buckham, Esq., No. 13, Judd-place, New-road, or J. W. Gracebrook, agent, Bull Wharf, Upper Thames-street, London.

BEST STAFFORDSHIRE and LONDON-MADE BOILERS, warranted, and supplied on the lowest terms; prices forwarded by addressing J. W. Gracebrook.

Bull Wharf, Upper Thames-street, August 4, 1849.

NOTICE.—WENHAM LAKE ICE SUPERSEDED!

(BY ROYAL LETTERS PATENT)

### MASTERS & CO.'S PATENT SHERRY COBBLER FREEZING and COOLING JUG.

By this Patent Jug, spring water is concealed into the purest ice, on the table or side-board, for Sherry Cobblers, &c., in FIVE MINUTES, at the cost of Two pence.

The public is respectfully invited to see the process of this extraordinary and useful invention, as actually BOILING WATER CAN BE CONVERTED INTO ICE without the aid of ice!

Patentees of the Freezing Machines (by which 20 to 100 quarts of Desert Ice can be made in a few minutes, and Rock Ice at the same time, and Wine cooled), Cooling Delters, Refrigerators, Butter Coolers, and Percolators. By this last-mentioned article a bottle of wine, &c., can be cooled in a minute without ice, for one halfpenny.

MASTERS & CO.'S IMPROVED APPARATUS FOR MAKING PURE SOD

## THE RECENT COLLIERY EXPLOSION AT ABERDARE.

An inquest was held on the 17th inst. on the bodies of those whose lives had been sacrificed by the recent melancholy catastrophe at the Lettly Shenkin Colliery. The jury were composed of tradesmen of the neighbourhood. The colliery in which this lamentable event took place is about two miles distant, and lies deep in the valley of Aberdare, the Taff Vale Railway running within a few hundred feet of it. It has been worked about five years, and it would appear, according to the statement of the colliers themselves, that the ordinary common candle is more employed in the workings than the Davy lamp. This great risk is incurred simply on the score of wages, for, according to the present rate, the colliers assert that their families would have to starve had they only to work by the lamp. Mr. J. K. Blackwell, the Government mining commissioner for the district, who has been engaged during the week examining the pit and instituting inquiries as to the cause of the deplorable event, was waited upon by a deputation of the colliers of the pit, selected by a meeting of upwards of 100 of the miners, with a view of ascertaining the best course they could adopt in improving the ventilation of pits, as also their domestic condition. We understand that much sound reasoning took place amongst the men, and that the commissioner undertook to lay their state and complaint before her Majesty's Government. We may also state that Sir G. Grey, the Secretary of State, had expressed a most strong desire that the strictest investigation should be instituted into the whole facts connected with the melancholy loss of life, the subject of inquiry.

The proceedings appeared to create the deepest interest in this great coal district, several of the largest colliery owners being present. Mr. Blackwell, the mining commissioner, was in attendance to watch the evidence. Mr. James, an attorney at Merthyr, appeared to watch the interest of Mr. Thomas, connected with the colliery.

The Coroner having briefly opened the inquiry, the bodies of the sufferers were described and identified.

William Williams, an elderly man, was the first witness called. Was foreman to the Lettly Shenkin Colliery on Friday, the 10th instant, the day it exploded; knew the deceased sufferers: witness appearing exhausted, the coroner allowed him to retire, intimating to him that he would be again called and examined as to the state of the pit.

Mr. David Thomas was then called and examined—I am agent to the Shenkin Colliery and manager of the underground workings.

Mr. Blackwell, the Government Inspector of mines, said he would suggest that they should ascertain from Mr. Thomas when and where the bodies were discovered of those who died from suffocation, as also those who perished from other means. If that course was adopted it would much simplify their proceedings. He would also recommend that a plan of the pit and workings be produced.

Mr. Thomas produced one, and spoke of its correctness, as also did Mr. Jenkins, the mineral surveyor of Aberdare. The witness then continued his examination in chief. On Friday afternoon, at the moment of the explosion, was engaged at the top of a new air pit, sinking for the pit. It is about 600 yards or more from the pit mouth. The new air pit is not finished. The first intimation had of the explosion was the noise at the pit mouth calling—had not heard the noise of an explosion—went towards the pit, and there was no appearance of an explosion outside, except a quantity of dust ascending the upcast pit. Nothing was injured at the mouth—the machinery was not damaged. Believing that an explosion had happened, went to the downcast pit, and by the ordinary means of the pump had an additional body of water thrown down, so as to increase the current of air, and if possible stop the fire. The upcast or drawing shaft is 120 yards deep, and 13 feet in diameter. There are three doors to the main level at the pit bottom. At the hard heading, about 300 yards from the pit bottom, met some men bringing out of the working in a tram the dead body of Ebenezer Davies. His skull was fractured, and he seemed to have been knocked about by the blast. I think he was killed near the first double parting. My reason for thinking so is that his horse (dead) and tram were found there, and some portion of coal had been thrown off the tram. The horse was not burned—went on to the division of the two levels, about 70 yards farther, and examined the upper level as far as the door was made. It was blown out to pieces—saw nobody there, but afterwards found the doorkeeper, a lad, Benjamin Sims, being carried out—he was severely burnt, but not dead. The door was 20 yards from the division. Then returned back to the lower level, and examined the two doors at the No. 2 deep head crossing. The upper door was blown outwards, and found that the air which ought to serve the workings was taken outwards, proceeding through the heading where the door had been fixed into the return air course. Thinking the man at the furnace might not have attended to instructions in immediately extinguishing the fire, and that a further explosion would ensue, witness went to the bottom of the fire, and directed the instant suppression of the furnace. The man had done all he could, but was affected by the after-damp. Returned to the heading with a carpenter and canister to restore the air current where the door had been blown away—did not go to the second door of that heading. Some men from a neighbouring colliery were down the pit assisting in rescuing the sufferers, who was almost overcome by the after-damp, but went on. The bodies were thicker at the bottom of the No. 2 crossing; some were not dead, but all insensible—found none of them burnt. Again descended, and assisted up to two o'clock on the following morning in bringing up the bodies.

Mr. Blackwell here proceeded to ascertain as near as possible where the deceased men were employed in the pit, and whether their deaths arose from suffocation, fire, or bruises.

Llewellyn Williams was in the upper level about half way between the first door, beyond the division of the first double parting on that level—was burned severely. Known to be a careful lad.

Mr. Blackwell—Were you aware of the existence of gas at the back of this heading beyond the part where the men were at work?—Yes; and I mentioned them about it.

Mr. Blackwell—Do you think, if an explosion occurred in the main level, it would have the effect of igniting this gas from their candles?—Yes, I do.

Several of the jury inquired whether it was likely that the gas in this heading exploded in the first instance?—I think not. I think these three men were suffocated by the first explosion, and burnt by the second.

The Coroner—Then there would be two explosions?—Mr. Blackwell said they scarcely could be called two explosions, for they would fire instantaneously. If the explosion had taken place in the heading, the doors would have been forced out towards the level, whereas they were driven in.

Witness had no doubt in his mind that the explosion in the colliery must have ignited the gas in the heading. The men were found lying on the ground as if they were asleep. They had done their best to get away, but were overcome by the after-damp.

The inquiry was then adjourned to Saturday morning, when it was resumed at the Town Hall.—William Williams was then recalled.

Mr. Blackwell begged to ask him a few more questions relative to the condition and ventilation of the pit.—The witness said he was authorised by Mr. Thomas, when he saw anything of falls or obstruction in the air ways, to set labourers to remove them. Knew that the roofs of the stalls were larger than the mouth of the crossing. Gas will collect in the vacances left by falls in the roof, and a fall will drive it out into the main air courses.

In reply to Mr. Blackwell, as to whether gas would form in these vacances and not displace itself in the mouth of crossing to those stalls? the witness replied such was probable.

And further, that, if there was a large accumulation of gas in these stalls, a fall from the roof would force it out in a large body into the main level? The reply was in the affirmative.—Had there been a large accumulation of gas or a strong blower, in the old works to which these crossing lead, it would have showed itself on the lamp. I passed the mouth of the crossing where the stalls were situated. I passed them at the lower end, and came out the upper level. I passed the ends of all crossings as I went. On the morning of Friday witness tried both ends going in and coming out.

Mr. Blackwell—Do you know whether the explosive gas is lighter than the air in the air currents?—Witness (shaking his head) No; I do not understand that.

Mr. Blackwell—That shows the value of your opinion. Can you tell where any accumulation of gas in a stall in a broken down state would lodge—in the roof or bottom?—

Witness: Yes, in the top.

Mr. James—Yes, he knows that fact, although he could not comprehend the previous question.

Mr. Blackwell—That is a matter for consideration. You said, yesterday, that it was your duty to examine the stalls, headings, crossings, and general state of the pit?—Yes.

Mr. Blackwell—But you have not been in all the old workings leading into the air courses?—Witness: I go through some of them, but not all.

Mr. Blackwell—Therefore you can't speak of what state they are in?—Witness: I have never been inside the stall or working outside No. 2 crossing, but I have been in the other old stalls.

The witness gave his testimony in such a disjointed and apparently uncollected manner that it was difficult even for the coroner to make up his deposition in an intelligible form.

The evidence of the foreman, Wm. Williams, was afterwards read over to him, after much preliminary delay; and as some statements in that evidence elicited fresh answers thereupon, and interpolations were frequently made, there was but little done. In the course of the proceedings the evidence of the foreman was taken. Its chief features were as to the supply of air kept up in the pit, which he described as being very good, and so great at the time just preceding the explosion, that he was obliged to carry his light in a lantern, to prevent its being extinguished by the draught in the neighbourhood of the furnace. He also stated that his duty consisted in keeping a proper supply of coal cut for the furnace fire, which he watched and supplied during the day; and this duty was performed through the night by a lad, who sometimes had another lad with him for company. On hearing the explosion, while near the furnace, he was blown down over the barrow of coals he was wheeling at the time; and, becoming insensible, from the sulphur which almost suffocated him, he was unable to put out the fire, as the manager required. There was some other evidence; but containing nothing that threw any light on the cause of the explosion, except as permitting the inference that some fire-damp must have been driven out of one of the old headings by a fall of roof, which damp might have come in contact with the uncovered lights of the hauliers, as they traversed the level with their trams.—The inquest was further adjourned.

On Monday, David Thomas, agent, the former witness, was then examined as to the state of ventilation. He stated he was the manager, or agent. The proprietor gave directions as to the amount of care required, but left the working department to him. There might be an accumulation of gas in the western stall, which this current would not sweep. He was not aware that there was gas in the stalls; is now aware there might be gas brought by falls from the roof. In these stalls the gas would be forced out into the upper level, near the pointing of No. 1, crossing. The rise end of No. 1 is the most elevated part of this level, and the gas is more likely in consequence to escape there, and that in consequence of the gas or rotation, which is between the levels, it is more likely to accumulate in this part. Examined but two stalls here. Examined the plan, and think it quite possible that the gas accumulated in the stall, and it will always accumulate in old workings, and that by a sudden fall of the barometer, or by a fall in the roof, the gas was forced out of the cavities, caused to issue out into air courses and crossings, and then probably was ignited by the lights of the hauliers. The inquest desired witness to state his opinion as regards the take air current, and whether through the system adopted here was sufficient for the purpose of clearing out the works?—Witness, in reply, stated that he could not well answer that question, as when he saw the pit it was considerably disordered by the explosion, but believes it was not a safe method. He did not think the gas should have any connection with the air courses, as it may issue out into them. In Durham it would be usual to force a portion of return air over the gas and make a separate way, not communicating with the air course or lights; his opinion was, as before stated, that the accident was the result of these causes. By a Jarow: Was he to understand that the principle of ventilation here was not proper or safe?—The Coroner intimated that the

opinion of Mr. Dobson was that a better system could be adopted.—Mr. Dobson, in answer to a remark said, that during his experience he had never seen an explosion occur in the main shaft, as in the present case; but that the ventilation of this pit, though perhaps different from others in the north of England, was about as good as any in the valley and district. The Coroner then further adjourned the inquest.

It ought to be mentioned, that the use of naked lights in the workings was generally admitted by the colliers. Among the sufferers there were four 13 years of age, two 12, three 11, one 10, and another only 8 years. There were several others whose ages varied from 13 to 15 years.

After four days protracted inquiry, the proceedings were brought to a close on Wednesday evening. Mr. Blackwell, the Government Inspector, Mr. Dobson, mineral agent to the Hon. E. Clive, Mr. James, solicitor, of Merthyr, and the numerous large coal owners of the district, who have taken great interest in the investigation, attended up to the termination of this important inquiry.

The jury having been absent about two hours, returned, and the foreman handed in the following as their unanimous verdict:—“We find the several deceased persons came to their death by accident, in consequence of an explosion of fire-damp, caused by gas oozing out of old and dilapidated stalls in No. 1 crossing, caused by a fall from the roof of those stalls, or by a sudden fall of the barometer, or by combination of those causes, the gas thus sent out coming into contact with the naked lights of the hauliers, at the time engaged in the upper level. And we further find, that the fire that took place in No. 1 crossing heading to the rise, and in the face of No. 4 deep heading, was caused by the first explosion occurring in the air course, and causing the gas to descend in contact with the naked lights of the hauliers.”

Secondly, we also recommend, in all instances, that the gas which generates in the old works should be carried off by a separate air current from that which ventilates the workings, and then brought into the return air current without any communication whatever with the “intake” air. It should be kept entirely secure from any communication with the naked lights of the workmen.

*Dreadful Colliery Accident in Scotland—Nine Lives Lost.*—An alarming and destructive explosion of fire-damp took place at Mr. Wilson's No. 6 Pit, Wishaw Colliery, on Monday, the 13th inst., at half-past 5 a.m., by which nine lives were lost. Some idea may be formed of the strength of the blast when we state that both cages, slides, part of the barring, a portion of the mid-wall, and one man, were blown up and out of the pit, and carried to a great distance in the air, and fragments of human flesh and bone have been gathered at 400 yards distance from the pit. From portions of clothing gathered in the fields, the man blown up is supposed to be Alexander McKinnon, a native of Tiree; but as the body has been dashed into a thousand pieces, no one can tell. Immediately after the blast, a boy, named Thomas Hunter, cried to be taken up; but cages and tackle of every description were blown away, and before a rope could be got, the pit was filled with damp, and life gone. Hunter's body was recovered about 5 p.m. on Monday. On Tuesday it was found necessary to put in 12 ft. of new barring before men could go down and up with anything like safety, and at 11 o'clock a.m., while men were in the pit putting in the new bars, a considerable portion of the roof, made the bars broke away, and swept the new bars, and everything opposite to it, to the bottom of the pit. Fortunately none of the men were hurt. On Wednesday, after the new bars were put in, considerable progress was made in putting in new barring, and on Thursday morning, five bodies were discovered, all severely burned, and one terribly disfigured. Of the other three, only fragments of their bodies have been found. Every human being in the pit has perished. At present none can tell who was the immediate cause of the blast. At the time it occurred there were nearly 30 more ready to go down, and all would have met the same fate.

*Scotland.*—A serious accident occurred in a pit, situated near Carmyle, and belonging to Mr. Findlay, of Easterhill. While two colliers were in the act of descending the shaft, to follow out their ordinary labour, the tow-rope attached to the vehicle which was conveying them to the bottom unaccountably gave way; the consequence of which was, that one of the men had his arm broken to the shoulder, and which has since been amputated; the arm of the other sufferer was also terribly shattered, and it was believed would likewise require amputation.

Tipton: T. Holden killed by a fall of coal.

*Oldbury.*—A lad, named Samuel Bettis, was dreadfully injured about the head by the accidental falling of a brick out of the side of the shaft of a pit, at Round's Green, under Messrs. Bate and Robins.

*Derbyshire.*—J. Walker was killed by the falling of a large stone from the roof, while working in a colliery at Thorsett. The *Derby and Chesterfield Reporter* says—This is the third death that has happened at this colliery within a short time, and its further working is to be discontinued.

## SLAVE HOLDING MINING COMPANIES.

A pressure of matter has hitherto prevented our making special reference to a letter which was inserted under this head in the *Morning Post* on Friday last [See *Mining Journal* of August 11], from the pen of Mr. Wm. Routh, secretary of the St. John del Rey Mining Company. It was an official communication on the part of the chairman and directors of the company, and purported to be a contradiction to statements made by a correspondent who signed himself “Anti-Slavery,” and a flat denial of the truth of our remark that “the employment of slaves by English mining capitalists is enough in itself to require condemnation.”

With regard to our own comment, as just quoted, we can only repeat that the employment of slaves by wealthy British merchants is a scandal to human nature; and the fact of Mr. William Routh being directed laconically to say that “the directors of this company entirely deny that imputation,” does not in any way invalidate our opinion, but strengthens the soundness of it, as not the slightest attempt is made to adduce any thing in corroboration of the views of the “directors.”

Chairmen of railway companies have always been ready to reply to an awkward question in a similar *ad captandum* manner; but we have seen that their sweeping conclusions availed them nothing, but only thickened the storm which ultimately burst over them. So will it be with the chairman, directors, and secretary of the St. John del Rey Mining Company. They may founder about for a time, and adopt all sorts of stratagems to put off the day, but the time is rapidly coming when slavery will be altogether extinct. Is it compatible with the spirit of the nineteenth century that British merchants should traffic in human beings? Is it not astonishing that gentlemen professing to be creditable citizens of London should have the temerity to justify such conduct? On points of no moment Mr. Secretary Routh is instructed to be very communicative, and to transcribe regulations *in extenso*, but all that he is allowed to do on this stirring subject is to make the simple remark that “the directors of this company entirely deny the imputation” that the employment of slaves requires condemnation.

However, the public at large are too deeply interested in the subject to be easily led to the views of these directors, and can easily judge as to the question who is right or wrong on this occasion—the directors of the St. John del Rey Mining Company or ourselves?

Mr. Routh admits “it is quite certain” that much sickness has prevailed, but the deaths, he avers, have “not exceeded 40 out of a population of 1106.” This is disingenuous. With the general reader, were it not contradicted, it would appear that, although there was an epidemic, the deaths were only at the rate of about 9 per cent. per annum; yet, when the whole is told, how different and how gloomy is the picture?

It is true that the population at the mines is 1106, but, of this number, about 500 only are, as we are informed, adults, and the remainder children, amongst whom there is scarcely any mortality at all.

Again, of this number of 500 adults, about one-half, or 250, are borers. It is amongst the latter class of wretched hard-working slaves that nearly all the 40 deaths have occurred in the space of five months, which is equal to a rate of 40 per cent. per annum. These truths are, it is said, well authenticated by those recently returned from the mines, who are now in Cornwall. But let us put the matter in a tabular form, that the result may be seen in every way:

Deaths.	Months.	Population.	Per Cent. per Annum.
40	5	1106	9
—	—	500	19
—	—	250	40

These 40 blacks entail a loss of 4000£. on the company, and another 4000£. will be required to reinstate them. This is, however, we are glad to learn, almost impracticable. The owners of slaves on hire threaten to withdraw their “property,” and labourers cannot be procured at any price. Indeed, it now seems certain that all must be sent from this country, at a great expense to the company. This would be a proper and legitimate course to pursue, and although it would materially interfere with the dividends, if not cause their suspension altogether for a time, the directors ought at once to act upon such policy. There is no other step they can take to redress their false position of being professed philanthropists, yet hard task-masters.

There are now, unfortunately, many unemployed miners in Cornwall, who would be glad to go out if good wages and proper recompence were insured them, and come to this probably must. The produce is already being taken off, and with the great reduction of hands by death, must continue to do so rapidly; so that events of themselves will soon bring to pass a total reform in the whole system, and, indeed, in the management of this and other slave-holding mining companies. Let the directors, therefore, at once put on a bold front. Let them tell the truth. Let them call the shareholders together, and honestly show them that unless they at once proclaim emancipation, and send out a corps of British miners, the dividends must cease. The sum, though small, could be easily raised by a fresh issue of shares, or, as we have before said, by a suspension of dividends for a limited period. It is trash—pastry nonsense, really, as Mr. Routh does, that “these companies have done excellent service to the interests of humanity by showing, in Brazil, in what manner a negro ought to be treated.” Let the company in question show the world what they ought to do as men of wealth, of business, of character, and, above all, as Christians. Nothing short of an instant and total disengagement of slave labor will satisfy true Englishmen, and the efforts of conscientious writers will never cease to be employed in exposing the conduct of these companies until the object is attained.

“The truth is,” continues Mr. Routh, “that as applies to the negro under this company, slavery is divested of all its practical evils, while, on the part of the company itself, it is a binding and active obligation to provide for all the wants of the negro in sickness and in health.” This is not the fact. Slavery exists at Morro Velho in the worst, the most hideous form, and the statement we have recorded as to the admitted facts is testimony sufficient of the veracity of our correspondents.—*Morning Post*.

*AMERICAN WHITEWASH.*—The following recipe is used for preparing the celebrated stucco whitewash, used on the east end of the President's house, at Washington. Take half a bushel of good unstacked lime; slack it with boiling water, covering it during the process to keep in the steam. Strain the liquor through a fine sieve or strainer, and add to it a peck of clean salt, previously dissolved in warm water, three pounds of good rice, ground to a thin paste, and stirred while boiling hot; half a pound of powdered Spanish whitening, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a slow fire in a small kettle, within a large one filled with water. Add five gallons of hot water to the whole mixture; stir it well, and let it stand a few days, covered from dirt. It should be put on quite hot; for this purpose it can be kept in a kettle on a portable furnace. It is said that about one pint of this mixture will cover a square yard upon the outside of a house, if properly applied. Brushes more or less small may be used, according to the neatness of the job required. It retains its brilliancy for many years. There is nothing of the kind that will compare with it, either for inside or outside walls. Any required tinge can be given to the preparation, by the addition of colouring matter.

On THE PRESERVATION OF WATER, BY M. PERINET.—M. Perinet, ex-

Professor of the Hospital Militaire d'Instruction, has succeeded in preserving water in a sweet state, by placing a kilogramme and a-half of black oxide of manganese in each cask of water containing 250 litres. He has kept this water for seven years in the same barrels, and exposed them to various temperatures;

at the end of that time he found it as limpid, free from smell, and of as good a quality, as at the beginning of the experiment.

## FOREIGN INTELLIGENCE.

## THE PRINCIPALITY OF WALES

BRIEFLY CONSIDERED, WITH REGARD TO ITS PHYSICAL FEATURES, SOCIAL CONDITION, AGRICULTURAL CAPACITIES, GEOLOGICAL STRUCTURE, AND MINERAL RESOURCES.—NO. III.

BY JOSEPH HOLDSWORTH, ESQ., M.G.S.F., &c.

[Continued from last week's *Mining Journal*.]

In this place we are tempted to offer, *en passant*, a few cursory remarks on the healthy and fashionable watering place of Aberystwith, and which derives no small benefit from the adjacent mines. This town, which is better built, and of a more cheerful aspect, than the generality of Welsh towns, is situated, for the most part, on a slight elevation, at the extremity of the vale of the Rheidol; here, bordered by ranges of lofty green hills, of abrupt but pleasing conformation, which, screening Aberystwith from E.N.E. and S.S.W., respectively terminate on the shores of the ocean, in high rocky cliffs and bold escarpments. Between these prominent points a little bay indents the shore; its pebbly beach—which abounds with a great variety of valuable stones—forming a regular and graceful semi-circle; opposite to which, the Marine Terrace, composed of some 60 well-appointed lodging-houses, and a handsome and commodious hotel, constitutes a noble sweep, closely following the curviture of the beach, and possessing in front a promenade of considerable extent and beauty. Every facility is offered here for sea-bathing, and there are some excellent public baths at the northern extremity of the terrace. A fine chalybeate spring exists in the immediate vicinity of the town. There is also a handsome suite of public rooms, consisting of a ball, promenade, card, billiard, and reading rooms.

The ruins of the once formidable Aberystwith Castle are parahount objects of interest to the visitor, and the grounds, which are now kept with much neatness, afford, from their inviting gravel walks on the elevated rock-bound promontory (the grass-clad knolls of which they intersect in all directions), some very extensive land and sea views. From this central position the coast is seen, forming a vast irregular curve, extending from the Island of Bardsey and projecting county of Carnarvon to the north, and Pembroke to the south—Cardiganshire and Merionethshire comprising the intervening portions. In clear weather the mountains of the Carnarvonshire peninsula are distinctly seen, constituting a most picturesque outline along the northern shores of this magnificent bay, and the lofty peaks of Snowdon and Cader Idris, with their serrated rocky dependences, present to the right a sublime array of Alpine scenery. Aberystwith, with its mountainous neighbourhood, possesses, in fact, many most inviting and novel attractions—to the English tourist especially, whether induced to visit it for health or recreation.

Passing from the more metalliferous regions of Cardiganshire, into North Wales, we immediately encounter the formidable mountain ranges, alluded to in speaking of the physical features of the country, extending east and west, from the towering saddle-shaped Arran Gessel, on the banks of the Dovey (along the Berwyn range), to the north-eastern extremities of Montgomeryshire, and which also stretch northward of this line of demarcation into Snowdonia. The slate mountains of these districts are of a more compact and uniform structure, often affording roofing-slate, &c., of an excellent quality; they also are occasionally intersected by lodes of lead and copper. Some very good veins of these ores have lately been found in the neighbourhood of Aberdovey, &c., and at the eastern extremity of this rugged, slaty tract, near Llangynog, Montgomeryshire, a lead mine, called Craig-y-mwn, was discovered in 1692, of so remarkable a character, that it merits particular mention. The vein of ore in this mine was three yards thick, and formerly yielded annually 7000 tons, producing a clear profit of upwards of 35,000*l.* In the immediate vicinity of the mine are some extensive slate quarries, which supply the neighbourhood with considerable quantities of coarse slate. Copper, zinc, calamine, manganese, and limestone are also wrought in this county.

We must here not omit to particularize an important group of slate-quarries, the most southern of the kind in Wales, situated about two miles to the south of Cader Idris, near the road leading from Machynlleth to Dolgelley. As it may serve to exhibit the character as well as the local and commercial importance of such undertakings, we may be excused here entering into a few brief particulars respecting them. The works, situated on the left of the road leading to Dolgelley, may be respectively named as they occur, nearly in a direct line, and a few score yards from each other, in the same excellent workable vein, which has been proved to trend across the mountain slopes on which the quarries in question are opened—viz.: Cach Coch, Gaewern, Tyn-y-cennant, and Tyn-y-borth. The Gaewern quarries, the property of R. Rowlands, Esq., were the first opened of the above series, and have now been in active operation for several years past: at the present period, they are capable of producing about 120 tons of slates and 120 tons of slabs per month, and they give full employment to nearly 100 men. The chief characteristics of the materials from this slate vein, which is of a deep intense blue colour, are density, strength, and extreme durability; it has been made choice of for roofing the National Gallery. The supply may be said to be inexhaustible; the vein, which has been found of an unusual thickness in the Gaewern Quarries, has recently been proved by the works in active progress on the Tyn-y-Cennant property to be of increased width, with a quality of material unrivalled. In the upper reaches of the vale of Corris, and nearly opposite to these works, are the extensive quarries of J. Jones, Esq., employing above 80 men.

Amongst the multiplicity of purposes for which slate has been employed within the last few years, there are none to which more interest, or growing importance, may be justly attached, than its peculiar adaptation to ornamental uses. To T. E. Magnus, Esq., whose Ornamental Slate-Works are situated in Pimlico, we are indebted for the first introduction of this useful and elegant art to public notice. An inspection of the various articles contained in his warehouses will afford abundant demonstration of the truth of his own declaration—that “slate, like porcelain, may be got up in various styles, from the simplicity suitable to a cottage, to the costly elegance required in a palace.” As regards its more general adaptation, amongst a vast variety of purposes particularised by Mr. Magnus, we may enumerate—cisterns, mangers, baths (enamelled inside as china), billiard tables, enamelled tombs, monuments and mural tablets, washstands and dressing-table tops, salting vessels, portable filters, mouldings and coving, plain and enamelled. Of the more *recherché* kind, he furnishes enamelled slabs for tabletops, consoles, pedestals, chimney pieces, &c., in imitations of Florentine, mosaic, and other costly and inlaid works, as also in the most beautiful and correct representations of rich and rare specimens of marbles, of which natural material they are not only one-third of the price, but are found to be stronger, stand heat and weather better, and are less liable to chip. The colours and polishes being rendered permanent by heat, it became a desideratum with Mr. Magnus to select the slate material, which, on efficient trial, might prove itself best adapted for this especial purpose; and he ultimately determined on the permanent use of the slate supplied by the above-named quarries, where, adjacent to Mr. Jones's Aberllefelynn quarries, he has established extensive works. Mr. J. George, of 43, Edgeware-road, London, has also selected this slate for the first essays in his important patented invention of erecting fire-proof houses, &c.—models of which he is now engaged in constructing near the quarries. By the conjoint employment of slab-slating and iron (his sole materials), he states that houses, shops, warehouses, churches, chapels, monuments, lighthouses, and buildings of every sort and description, can be most economically erected in the best architectural forms, in the strongest and most compact manner, and in the shortest possible time, and also, so as to be at all times perfectly secure from fire. It is hardly necessary to observe that, when this “new system of building” becomes duly known and appreciated, it will incalculably contribute to the development of our national resources, and open a new and never-failing field to mechanical labour and commercial enterprise; indeed, whenever it becomes the “fashion of the day,” slate quarries and iron mines will be estimated, and eagerly sought after as the true Golconde of the country.

The village of Corris, which a few years ago was but a miserable mountain hamlet, has already, solely in consequence of the opening of this group of slate quarries, risen into a place of considerable importance; a national English school has been founded; another, together with a small church, is about to be erected, and a railway will shortly be laid down from hence to the port of Aberdovey.

It may be needless to remark, that the returns yielded by a good slate quarry far exceed almost every other species of investment, commonly producing a clear profit of from 50 to 90 per cent.; and when the risk attendant on the opening of the rock (often an expensive process) is surmounted, and the quality of the slate vein proved; the speculative character of the undertaking disappears, and it forthwith becomes a solid and *bona fide* channel for the permanent employment of capital.

The geologist recognises mica slate, talcous slate, flinty slate, and com-

mon or clay-slate; but of these, the last only is a material of extended use in the arts of building and construction. All of these varieties of slate are found alternating with each other in the same rocks in North Wales; hence the varied qualities of slate often discernible in the same mountain. The common, or clay-slate, abounds in the most rocky districts, and is found lying upon granite, gneiss, or mica slate. It very generally exists in veins or beds of various thicknesses, bounded by the coarser kinds of slate. Its laminar texture admits of a ready separation into thin plates, and thus endows it with a supreme value for roofing and other purposes, in which great density and comparative impermeability are required to co-exist with a minimum thickness and weight. All the more compact, finer, laminated, crystalline slate-rock invariably splits in a transverse direction to that of the beds, making with that direction an angle of about 60 degrees, and it has frequently two distinct cleavages. This peculiarity of structure is now considered to have been effected by crystalline action, or by polar forces—i.e., magnetic currents, having modified the whole mass, acting upon it in given directions, and with adequate power.

On the northern verge of the tract of slate mountains we have just been considering, and immediately across the beautiful verdant vale of Talylyn, we here first come in contact with basaltic rocks, the stupendous piles of its porphyritic trap, or greenstone, felspar, and cinnabite masses, rising precipitously up from the vale, constitute the majestic mountain of Cader Idris. From this pre-eminent point a chain of primitive mountains, more or less broken by intervening slate rocks, trends in a north-north-east direction through Merionethshire into Snowdonia, where we meet with extensive formations of hornblende, schistose, mica, porphyry, and granite—basaltic, porphyritic trap, and greenstone predominating in the western Merionethshire portion of the range.

The districts for the most part included in, and more immediately adjacent to which, are not considered as, strictly speaking, metalliferous, but the several important discoveries of metallic ores made therein, within the last few years, would appear to invest them with strong claims to the designation. Excellent lodes of copper, &c., have been found in the neighbourhood of Barmouth, and a copper mine of high promise, called Caemission, has recently been commenced a short distance to the eastward of it. Some years ago a remarkable cupreous deposit was accidentally found to exist in a rather extensive bog, or turbary, situated a few miles to the north-east of Dolgelley. On the whole of the bog turf being dug up, and submitted to a smelting process, it is said to have yielded 7000*l.* worth of copper ore! In the same boggy tract several large masses of native copper were found embedded in the soil. Several attempts were subsequently made to discover the source, or lode, where the parent copper deposit was supposed to exist *in situ*, in the adjacent mountains, from whence the ore found in the bog must have originated, being conveyed there in a state of solution by the mountain springs or streams; and but lately these researches have been rewarded by the discovery of a very rich lode of copper. On a grant, consisting of 12,000 acres, the property of H. Richardson, Esq., of Aber Hirnant House, near Bala, which has recently been subjected to the minute investigations of eminent mineral surveyors, several valuable lodes of lead and copper have been discovered, and, in some instances, traced to very considerable distances on their line of direction; one of these east and west lodes, which is already producing rich ore in the new openings, has been distinctly traced to, and identified with, the Langynog Mine, already mentioned as being situated on the north-eastern borders of Montgomeryshire, and, at the present period, realising to the proprietors about 30,000*l.* per annum. The grant, containing the latter mine, lies adjacent to Mr. Richardson's extensive and valuable metalliferous tract of mountain land, and which, it may be remarked, is occasionally intersected by massive ranges of limestone.

At Dinas Mowddy, Cach-Coch, the recent discovery on the property of J. Hartley, Esq., and at several other places in the county, some excellent lodes of copper and silver-lead ore are being worked. At the former place, smelting-works, in connection with the mining companies of that locality, are about being established. But the most surprising results realised by recent enterprise in this part of the country are the Cwmheisian Gold Mines, situated on the banks of the River Gain, about eight miles from Dolgelley. The *sett*, which is of considerable extent, contains many veins and lodes of metallic mineral matter, comprising argentiferous lead, sulphurites of zinc, iron, and some copper, arsenical pyrites, and gold disseminated through all, but chiefly in the zinc and lead ores in a granular state; the matrix being chiefly indurated trap, with quartz and carbonate of lime. On the eastern portion of the grant, 14 lodes have been discovered, running, for the most part, in a north-west and south-east direction and from some of which, at a depth of about 15 fms., several hundred tons of ore have been raised, all containing gold. At and about the intersection of the lodes, on the east side of the river, all appear to form one vast lode, of upwards of 40 feet wide, from which ore may be taken with great ease, chiefly blends, but still mixed with gold. The average produce of gold from this part of the mine was something less than 16*l.* ozs. per ton; but on assaying chosen stones of ore (on which the gold sometimes appears as a superficial efflorescence) as much as at the rate of 500 ozs. of gold per ton were obtained. The predominating rocks of this district are of the clay-slate formation; but they are almost everywhere intersected by vast dykes and masses of porphyritic trap, chiefly of the green and grey stone character. The present spirited proprietor of the Cwmheisian Mines, who, for their effective working, has erected some really magnificent apparatus, purchased the grant of the original possessor for about 14,000*l.*

On one of the lower ridges of Cader Idris, an inferior kind of plumbago has just been discovered in a clay-slate formation; the operations are as yet very partial, but as the requisite metallic lustre appears to increase as the level penetrates into the deeper portions of the dark carbonaceous bed enclosing it, a sanguine belief exists that the present spirited efforts will be ultimately crowned with success; if so, it will be the first discovery made in Wales of this invaluable mineral. In concluding these very brief and imperfect notices of the metalliferous treasures of Merionethshire, we must not omit to mention that veins of black specular iron ore are occasionally met with; the skirts of Cader Idris afford some thick beds of a rich magnetic iron ore.

In the upper part of the beautifully picturesque Vale of Festiniog, we find the second important group of slate quarries. The slate is of a fine, close, flexible quality, of a light blue colour, and obtains a very ready sale. It exists in mountain masses, and beds of various thicknesses, often enclosed between the trap, or greenstone, abounding in this neighbourhood. Sometimes very thin strata, or veins, of these rocks are seen intruded between the beds of slate rock; when this is the case they are found to injure the slate, and destroy the cleavage of its structure for a considerable breadth. They are commonly removed by blasting, but form a very expensive impediment to the operations of the slate miner. These extensive and most profitable quarries are said to afford employment to upwards of 2000 men; and here, again, we behold on every hand the rocky region decked and gladdened by the usual concomitants of such spirited undertakings. A commodious modern built church looks down from its lofty site with benign aspect on the neat white dwellings, which are thickly scattered around; and a railway is observed cleaving the rocky heights, piercing through mountain buttresses, and taking its devious course through dark hanging woods on its way to Port Madoc—a pretty, clean, little, modern town, seven miles distant, containing many well-built residences, almost wholly occupied by English connected with the quarries, and to which, in fact, the town may be said to owe its existence.

In the wild basaltic region to the south-west of the above vale, and five miles from Harlech, is the romantic lake Cwm Bychan, which merits a place in this partial enumeration of natural products, from the circumstance of a very peculiar deposit of a pure snow-white earth being recently found to cover the entire bottom of the lake to a depth of many feet. It is found, on analysis, to be composed of silica and magnesia, is said to possess the properties of kaolin, or porcelain clay, forms an excellent base for pigments, imparts the highest polish to metallic substances, and is believed to be very generally applicable to the arts and manufactures.

But Science, with her Argus eyes, has just discovered, in the hitherto almost worthless peat bogs of mountainous regions, a new source of wealth, and a wide field for manual labour. Jasper W. Rogers, Esq., C.E., has recently patented his discoveries in peat moss, as convertible into a superior kind of charcoal, to be applied as consolidator and deodorizer of the solid matter of the London sewers, and thereby converting it into a conveniently transportable manure of the most powerful description. His practical demonstrations of the process have proved eminently successful; but, independent of its power of fertilization (either in its individual state, or its intimate intermixture with animal excretiae, by which process all the gases of the latter are instantly absorbed, and effectually retained for the demands of vegetable development), the dense condition in which peat char-

coal can now be readily produced, peculiarly adapts it for the making of “charcoal iron,” which hereafter may, probably, be manufactured in sufficient quantities to supersede the necessity of introducing foreign iron of that superior description into the country. Thus, the extensive turbaries and iron mines of Wales, can be brought to exert together an important part in her amelioration and prosperity, and present another striking illustration, that the benevolent Author of the Universe designed all natural productions, when rightly used, as benefits and blessings to his creatures.

In the immediate vicinage of Snowdon several valuable metallic lodes are known to exist. In the pretty romantic Vale of Llanberis, at the northern base of this monarch of Welsh mountains, there are some extensive copper-works; and in the Vale of Llanelli-frie, on its western skirts, is a mine of this metal, yielding at the present period 120 tons of ore a month.

About two miles lower down this vale, another assemblage of slate quarries is to be seen, and which may be said to be the first in this direction, worked in what is termed the Bangor vein. The colour of the slate-rock here is that reddish purple tinge so peculiar to the slate of the Penant quarries, and, like it, is remarkable for its extreme suppleness, tenacity, and ready divisibility into *laminae* of any required thickness. The more capacious of these quarries—although sometimes considerably encumbered with rubby beds and posts, and though the material has in some instances to be hoisted up to the surface from a depth of 50 or 60 yards by powerful steam wrought machinery—are respectively yielding clear profits of several thousands a year, according to the number of men employed, and the magnitude of the operations. A tram-road of eight miles in length is laid from the pits to the port of Carnarvon. The other considerable groups of quarries are situated on the Penant estates and at Bangor—in the whole of which several thousand men are commonly employed. Above 150,000*l.* are said to have been expended at the former in railroads, and other improvements, for the transit of the slate to the port. The profits of the latter works alone are understood to amount to about 80,000*l.* per annum. Notwithstanding the number of quarries which have of late years been opened, it is found that the supply is scarcely adequate to the demand—a circumstance which, however, can excite little or no surprise, when we reflect on the extensive purposes for which slate is employed in Great Britain, and also that most extensive exports of it are almost constantly taking place from this country, both to the continent of Europe and to America. The Liverpool merchant is known to clear a handsome per centage by his transhipments of this material to the United States, where, at New York, New Orleans, &c., our roofing slates are in great request. The freightage across the Atlantic is usually about 16*s.* or 18*s.* per ton for slates. Thus, in these quarrying undertakings alone, by the enterprise and perseverance of public spirited individuals, have the most barren and uninhabited tracts become the certain and ready source of inexhaustible treasures, and from which are continually emanating a variety of substantial blessings that tend to advance the prosperity of the nation, gladden the hearts of thousands, and diffuse life and beauty through expansive regions, heretofore characterised only by desolation and sterility.

The Island of Anglesea affords several valuable mineral products, but their individual importance is far eclipsed by the extraordinary copper-mines in Parys Mountain, near Amlwch. Fifteen brigs, from 100 to 150 tons burthen, besides sloops, were formerly employed in exporting the produce of these mines, consisting chiefly of coarse copper, a richer copper, dried precipitate of copper, ochre, refined sulphur, green vitriol, alum, calamine, &c. The bed of ore in this mountain was in some places 24 yards in thickness, from which the proprietors are said to have raised annually from 18,000 to 25,000 tons of mercantile ore! This wonderful metallic repository was discovered in 1768. The Mona Mines are in the same vein, sometimes 100 yards broad, and occasionally, in this lode, above the copper ore, and not more than three-quarters of a yard beneath the common soil, is a bed of yellow saponaceous clay, one to four yards thick, containing lead ore, and yielding from 60 to 1000 lbs. weight from 1 ton. No less than 57 ozs. of silver are abstracted from a ton of this metal. About six miles from the Parys Copper Mine some beautiful varieties of red and green serpentine occur, in beds of great thickness, associated with the common slate rocks of the district. The red is sometimes intermixed with a great variety of other rich colours in the same stone. For the purposes of ornamental architecture it is held in considerable repute, being, in beauty and durability, not exceeded by the most costly marbles of Italy and the Pyrenees.

Returning now to the main land, we find several copper mines, both of ancient and recent date, on the stupendous slopes of the Orme's Head, which have also produced incredible quantities of ore. At the present period the land is allotted in small parcels, or gales, to the miners, who call the mountain “Welsh California,” the results of some of their “diggings” having well warranted the designation.

[To be continued in next week's *Journal*.]

SEMI-GRAVITATING STEAM-ENGINE.—There was exhibited on Friday last, before a large party of gentlemen, in Messrs. Scott, Sinclair, and Co.'s foundry here, a novel 6-horse high-pressure steam engine, constructed to drive a threshing-mill in the island of Islay. The cylinder receives the steam only at the bottom; it is 12 inches diameter; the piston is solid, 12 inches in depth, and metallic packing; the connecting rod is inserted half into the solid piston, and held by a pin; the upper end is connected to the crank in the ordinary way; that with the eccentric wheel and strap and fly-wheel are all the trappings on the engine. The connecting rod and piston weigh 3 cwt., and the fly-wheel 10 cwt.; one-half of its circumference is hollowed out with cores in the inside of the rim—the other is entirely solid. This engine will perform the work of any six-horse power engine, with much less fuel than is commonly used; at the present price of coal 1*l*. per hour will suffice to keep the necessary supply of steam up in the boiler. The engine stands on a small space, and is constructed at one-third less price than the ordinary cost of engines, and so simple that any labourer or peasant may easily attend to it. The engine has been invented, constructed, and patented by our ingenious and enterprising townsman, Mr. John Hastie, foreman to Messrs. Scott, Sinclair, and Co., and the smooth and easy manner it performed its evolutions gave great satisfaction to every person present, who highly commended Mr. Hastie on the success which his skill had attained in simplifying the use of the steam-engine. We have much pleasure in stating that Mr. Hastie is also patented of the grain mills which have been for some years in full operation throughout the country.—*Greenock Advertiser*.

ROT IN GALVANISED IRON.—Graham is of opinion that the corrosion of iron in water is in general immediately occasioned by the formation of a sub-salt of iron with excess of oxide, of which the acid is supplied by the saline matter in solution. As a preventive to this, he thinks that “articles of iron may be completely defended from the injury occasioned in this way by contact with the more positive metal, zinc, as in galvanised iron, while the protecting metal itself wastes away very slowly.” It must be here noted, however, that this advice, though theoretically correct, implies the perfect purity of the zinc; for if it contain, as much of it does, either arsenic or sulphur, the very contrary may be anticipated. Arsenic is a much more negative metal than iron, though zinc be somewhat more positive than it, and will, accordingly, on the very same theoretical grounds, decidedly tend to hasten the corrosion of the iron; and as for sulphur, it is well known that in association with iron, it will cause the iron rapidly to rot in moisture, sulphurites of iron readily putrefying, decomposing water, and forming sulphuretted hydrogen on the one hand, and iron rust or oxide on the other. And, indeed, as arsenic is but a metallic sulphur after all, there is not the least doubt that arsenical pyrites, or arseniure of iron, will also rot just as readily as ordinary pyrites, or sulphure of iron. It is thus that we would attempt to explain some contradictory testimony on the subject of galvanised iron. The perfect purity of the zinc is a point of great importance.—*Builder*.

LIGHTHOUSE LAMPS.—On Friday evening last three lamps were lighted at the Royal Marine Barracks, Woolwich, one a reflector of the Trinity Corporation, on Captain Huddart's principle 21*l*. inches diameter, 8*l*. inches deep, with an argand lamp at 3*l*. focal distance; the second with a reflector on a plan submitted by Mr. A. Gordon, similar to one he had fitted for the Cape Pine Lighthouse, on the coast of Newfoundland; and the third on the same plan as the second, with the addition of a set of four annular glass refractors. Mr. Gordon's reflector is 15*l*. inches diameter, 13*l*. inches deep, and has an argand lamp at 1*l*. inch focal distance. The glass annular lenses are arranged at the mouth of the third, their extreme diameter being 38*l*. inches. The lamps were lighted at 8.30 P.M., and the judges appointed to decide on their merits proceeded to Rainham, in Essex, six miles distant, to ascertain which plan produced the best light. Mr. Gordon's plan, with the annular glass lenses, was the best when viewed full in front; and Captain Huddart's, or the kind used by the Trinity Corporation, was the best when both were tried at an angle of 7° of divergence off the line of the observers. The Trinity Corporation light appeared the brightest as seen from various parts of Woolwich.

LONDON AND NORTH WESTERN.—A memorial from the mayor and inhabitants of Dudley has been presented to the directors on the subject of constructing the railway, which they are empowered to do by Act of Parliament, between Oldbury and Dudley, and which would accommodate a mining population of 50,000 persons, at a cost of 100,000*l.*, and it has been agreed upon by the inhabitants to raise a subscription to compel the company, in the event of their declining, to do it.

## Mining Correspondent.

The Commissioners of inland Revenue having notified to us their resolve to charge with advertisement duty all reports having the agents' names affixed, we appealed to them in a memorial, setting forth that we, or the respective companies, derived no advantages therefrom—the only object sought, or obtained, being that of affording to the mine adventurer and public the greatest guarantee we could for the truthful and *bona fide* nature of the statements periodically set forth, by authenticating them, and thus fixing a responsibility on the writer. The Commissioners have replied, that "the reports, with names attached, are advertisements, and that duty will be charged thereon." We have no alternative but submitting to their dictum. How far the Commissioners are correct in the view they take, our readers can judge as well as ourselves;—we can but hope that, on reflection, they will see the error into which they have fallen, and rescind the orders they have issued. All reports inserted under this head, however, may, as heretofore, be considered as furnished by the regular agents of the company; and we shall carefully guard against the publication of statements which cannot be relied on as correct.

## BRITISH MINES.

**ALFRED CONSOLS.**—The engine-shaft here is sunk to the depth of 9 fms. under the 50 fm. level—the lode in the bottom being 6 ft. wide, presenting a much better appearance than it has had at any time for the past month; the ore courses consist of three branches—one of them being 2 ft. wide, one 6 in., and the other is a solid branch, 1 in. wide. There is also a decided improvement in the character of the ground, which is becoming softer, and contains more spar—the latter being, in my opinion, a very cheering feature; in fact, the ore already in it is of a more pure and substantial nature than we have been accustomed to see here. In the end of the 50 fm. level west the lode is about 5 ft. wide, spotted with ore, and in the end of the 60 ft. east is 5 ft. wide, very promising, particularly for ore, in the next level underneath. On the whole, I am better pleased with my inspection of to-day than with any other since the improvement began in the shaft.

**BARRISTOWN.**—The lode in the winze sinking in the bottom of the adit level, west of Dodge's shaft, is about 2 ft. wide, composed of carbonate of iron, blende, and thinstly mixed with lead. The lode stopping in the back of the 16 fm. level is producing about 8 cwt. of lead per fm. The lode in the back and bottom of the adit level, west of adit, is producing about 4 tons of lead per fm. The end driving east of the slide over the adit level is improving in appearance; the branches are more mixed with lead.

**BEDFORD UNITED.**—At Wheal Marquis, having met with (but now, I hope, passed through) a hard band of ground in the engine-shaft, our progress has not been so good as I could wish. In the 103 fathom level, west of Burley's winze, the part of the lode carrying, about 2 feet wide, is good work; in this level east the lode has not been taken down. We are still driving by the side of the lode in the 90 fm. level; stones of ore are occasionally met with on the south wall. The lode in the 70 fm. level is 2 ft. wide, producing good saving work.

**BRYN-AR-IAN.**—I enclose the cost-sheets for July month, by which you will perceive that the cost is one-fourth less than that of June month. The lode in the 10 fm. level is much improved since my report of last week, and is now yielding 15 cwt. of lead ore per fm.; I expect we shall be under the run of ore ground that is gone down from the deep adit level, in a fortnight. The stopes in the back of the deep adit level is now worth about 132 per fm.; the stopes back of this level, east of the winze, is producing 15 cwt. of ore per fm.; the stopes in the north side of the winze, under the deep adit level, east of the engine-shaft, yields 10 cwt. of ore per fm. We have cleared out more of the old men's workings in the shallow adit level, and taken away some of the arches that were left by them. The 20 tons of ore sold to Messrs. Sims, Williams, and Co., for 92.15s. per ton, is ready for shipment, and 20 tons will be ready for sampling by the 25th September. Our machinery is working very regular, and we have abundance of water for all the dressing purposes.

**CARTHEW CONSOLS.**—Upper Mine: I feel pleasure in having to report to-day that we have, after the many manifold difficulties to contend with of late, as well as the casualties we have met with, completed the plunger lift in the 48 fm. level, which works well; this work having engrossed the greater part of time of many of our tuftwork men, but little has been done in this branch here this week, which leaves but little opportunity for comment to-day, still the little that has been done gives a very satisfactory result. The tribute department looks indeed remarkably well, and each pitch has this week been yielding very rich work in lead and copper.—Lower mine: Here, as well as at the upper mine, our tuftwork operations have been limited since my last; but an improvement in the lode is visible—the ground is good.

**CWM ERFIN.**—The 20 fm. level, east of the engine-shaft, is worth 122 per fm.; the stopes behind this end is worth 122 per fm.; the stopes 10 fms. east of the engine-shaft is worth 77 per fm. The sink about 30 fms. east of the engine-shaft (for the length, 12 feet) is worth 132 per fm. The rise over the 20 fm. level, towards ditto, is worth 122 per fm. The 20 fm. level, east of the winze shaft, is poor. The sink about 25 fms. east of the whin shaft, for 12 ft. long, is worth 152 per fm.; the stopes west of ditto, in the back of the 10 fm. level, are worth 67 per fm.

**DEVON AND COURTEENAY.**—The lode in the winze in the bottom of the 40 fm. level, west on the gossan lode, is 5 ft. wide, composed of white iron, blane, and some branches of ore; the ground is favourable for sinking, and the water not very plentiful; in the rise in the back of this level, which we last week commenced close to the end, the lode is 2 ft. wide, composed principally of white iron, among which have been broken this week some beautiful stones of black and coated ore; in the 50 fm. level the men continue to drive north on the cross-course to intersect the gossan lode, east of the great cross-course; the ground is at present rather stiff; the three pitches in the back of this level continue to look well.

**EARL CROWNDALE.**—We have commenced sinking the middle shaft below the 17 fm. level, and have a good stone of tin to start with; should the lode continue good as at present, it will pay the expense of sinking. The four men searching the bottom of the 17 have gone over about 3 fms. in length, and about 5 ft. deep of good work for tin, which will be brought to surface this week. Our stamps are doing well; and I hope the quantity of tin promised will be forthcoming at the time named in my last.

**ESGAIIR LLEE.**—There is no alteration in the south lode in the stopes east of the engine-shaft since my last report; the north lode in the deep adit east is 6 feet wide, and looking quite as well as last reported; of the lode in the winze below the shaft low adit we cannot speak as to its size; but the south part of it for 4 ft. wide, which we are sinking on, looking rather better than last reported.

**EXMOOR WHEAL ELIZA.**—In our last report, we intimated some fear that these branches through which we passed in the 24 fm. cross-cut were the lode; but, hoping for the best, we continued the cross-cut north, and have great pleasure in stating that our fears have yielded to the most pleasing satisfaction, having cut into the lode about 3 ft., and not yet discovered any north wall; it is composed of solid, hard, and gilded mundic, with some copper, free from gossan; it is of the most inviting and promising character; the surrounding stratum is a light killas. About 6 ft. south of the lode there are several branches, varying from 4 to 10 in. wide, composed of gossan and copper of very superior quality, which will form a junction with the lode about 3 fathoms further east, at which point it is highly probable that the lode will prove productive. We have also set to drive east on the caunter lode, at 50s. per fm., where it is 6 ft. wide, composed of gossan, thickly impregnated with copper; this will form a junction with the north lode about 20 fms. further east, and is a very important consideration in this speculation. We have likewise set to drive directly south, to cut the south lode, just at that point where those splendid specimens of copper were taken from in the level above. On the whole, this is the most presumptive evidence for believing that, with a little more outlay, this mine will stand conspicuous amongst those paying mines whose shares are so eagerly sought after, at a very high premium. Whatever may have been the misrepresentations of any prejudiced shareholder against either of the agents, they are prepared to prove that no exertion on their part to economise the incidental expenses of the company, and, at the same time, to embrace in their operations the saving of time, has by any means been either omitted or neglected by them.

**HOLMBUSH.**—The lode in the 120 fm. level south is from 3 to 4 ft. wide, composed of soft quartz, blane, and lead, producing 3 cwt. of the latter per fm.—ground much more favourable than it has been, and the lode more promising. The ground in the 120 fm. level cross-cut south, towards the flap-jack lode, is still favourable, and the eastern wall of the cross-course is very smooth. The lode in the 110 fm. level south will produce about 5 cwt. of lead per fm. The lode in the 100 fm. level south is 2 ft. wide, composed of soft spar, blane, and stones of lead; the flap-jack lode in the 100 fm. level, east of the great cross-course, is 20 inches wide, composed of spar, mundic, and stones of copper ore.

**KIRKCUDBRIGHTSHIRE.**—The lode in the 62 fm. level east is 4 ft. wide—a mixture of spar and ore, yielding 4 cwt. per fm. We have both the lodes in driving west; the north lode is 3 ft. wide, with a small branch of ore, worth 5 cwt. per fm., and the south lode is 2 ft. wide, yielding about 6 cwt. per fm.—both very kindly at present. The lode in the 50 end east is 1 ft. wide, with lead scattered through the stone; and in the winze over it is not so well. The lode in Keith's shaft is 2 ft. wide, not yet improved. The lode in the 50 end west has improved this week; this is a branch of lead coming in the back worth 5 cwt. per fm. The lode in the 40 end west is 2 ft. wide, a fine kindly spar and jack, with stones of ore. We are expecting a vessel daily to ship off a cargo of lead.

**LAMHEROOE WHEAL MARIA.**—At the engine-shaft we have made an addition to the 9-inch plunger, which is now equal to a 12-inch. By so doing, a delay was occasioned by being obliged to stop the engine at different periods to fix work, and could not have proceeded with the sinking, owing to the increase of water overpowering our former lift. This being completed, we shall then commence driving to intersect the lode, which lode we expect to cut about the end of October. At Davey's shaft, the north wall is getting to wear much—should say, we are not far from the south underlayer. This shaft is about 48 fm. deep, and should have been deeper, were we not obliged to take those men to assist in making addition to plunger in engine-shaft. This shaft will be at its given depth about the end of September. By referring to sketch forwarded last week of the lodes at the 50 fm. level (Davey's), you will then ascertain the distance. Last week we met with an accident in bursting a door-piece, which will cost about 5*s*. to replace.

The committee have endeavoured, in various ways, to ascertain from the agent, when, and at what further cost, he would be able to ascertain the value of the lodes in proximity to the two shafts; and latterly have forwarded to him a series of questions, requiring categorical answers to the same, and from which replies the committee are enabled to form a tolerably definite opinion upon the above points, and which opinion they now submit to the meeting:—The lodes in proximity to the two shafts are F to M (7 lodes). F has been intersected in the engine-shaft at 54s. fms. in depth; J, at 15 fms.; and K, at 33 fms. in Davey's shaft. The latter lodes were also driven upon by a cross-cut at 30 fathoms, and their quality has been reported upon from time to time. It having been determined to sink the engine-shaft to 60 fms., and Davey's to 50, before again driving upon the lodes, this work will be performed by the end of September. At the engine-shaft, the F lode will be cut about the end of October. At Davey's shaft, the H lode (south underlayer) appears, by the agent's report of yesterday, to be now coming into the shaft. The K (north underlayer) will be cut by the end of October, it being supposed about 3 fms. from the shaft at the 50. The J and L are from 15 to 17 fms. from the shaft; it will occupy about six months from the end of September to reach them. The opinions given by practical miners upon the ore hitherto seen in the mine are, that it is equal to the average of the district.

**MENDIP HILLS.**—We have smelted the pile of slags named in my report of last week, which produced near 2 tons of lead, and by Wednesday morning I hope to commence smelting another such heap. The beds of stuf in Charterhouse Valley continue without the usual alteration, being about 16 ft. thick, producing some very good slags. Blackmoor dressing floor is, I am glad to inform you, nearly completed. We have commenced working with one of the washing strakes, the slags from which look well, and by the end of the week we hope, if all be well, to see the floor in full operation. We have just resumed our works at Ubby; the men are at present engaged in removing the rubbish for the dressing floor, which will also be brought into working condition as far as possible.

**RUNNAFORD COOMBE.**—Morris's shaft is still hard, and is sinking, by nine men, at 12*s*. per fm., and there is about 3 fms. of the same sunk below the adit level. The north cross-cut is still very hard; but we shall not cut the lode so soon as we anticipated, on account of the ground being very hard, and is driving, by four men, at 4*s*. per fm. The stopes are suspended, on account of being worked so high and so near the surface, that we are got up out of the tin, and the men are not willing to take the same on tribute. There is a good lode in the bottom of the level, about 4 ft. wide, 2 ft. of which is good tin work. We have cleaned up a sink about 15 ft. deep, and to-morrow we shall cut through the lode, where there is every probability of cutting a rich and lasting lode. As for the sampling, I cannot say much about it as yet. The stamps have been working up and covered in, and the stack will be completed this week. The boiler or engine is not yet on the mine, but I am expecting them every day.

**SOUTH WALES.**—The Bodcawl north lode, in the deep adit east is not improved since my last report; and I have put the men to drive west of the cross-cut on the same lode, in order to prove whether the ore from the shallow adit dipped west or not. The lode in the Dowlais deep adit, east of the Rhymney river is 6 ft. wide, and looking much more kindly than last reported, and is producing some good stones of lead; and I fully believe, as the level proceeds a little further into the hill, the lode will prove to be very productive.

**SOUTH WHEAL TRELLAWNY.**—The ground in the engine-shaft, sinking below the 40 fm. level, is not so favourable as it was above it; a branch having passed through the shaft dipping east within the last 6 ft. sinking, under which there is a hard elvan, but we hope soon to get through it. In the 40 fm. level we have cut a plat the eastern side of the shaft, where we intersected what is called the spar branch, which was opened on in the 30 fm. level; it is 2 ft. wide, composed of soft spar, mundic, blane, and killas, and sprigs of lead—the former branch is composed of mundic, spar, and crystals of yellow copper ore; from the present direction and dip of both, they will form a junction a few fathoms below the present depth, which is an important point to reach. The water is up and covered in, and the stack will be completed this week.

**TRELEIGH CONSOLS.**—Garden's shaft, below the 113 fm. level, is sinking in the country. In the 90, west of ditto, the lode is 18 in. wide, with good stones of ore, and is looking more kindly. In the 80, east of ditto, the lode is 15 in. wide, worth 2*s*. per fm.; in the 80, east of cross-cut, the lode is 18 in. wide, worth 3*s*. per fm.; in the winze below the 80 the lode is 1 ft. wide—poor. In the 60, west of Garden's, the lode is 2 ft. wide, with good stones of ore. At Wheal Parent, the engine-shaft below the 30 fm. level is sinking in the country. In the 30, east of ditto, the lode is 3 ft. wide, worth 2*s*. per fm.; in the 30, west of ditto, the lode is 18 in. wide, worth 2*s*. per fm.; in the 20, west of ditto, the lode is 1 ft. wide, with stones of ore. In the whin-shaft below the 12 the lode is 18 inches wide, with stones of ore. Nicholson's shaft the men have completed to the adit level, and will soon commence sinking below.

**WHEAL BENNY.**—By cutting the cross-course at the engine-shaft (Lamherooe) we have drained the Benny lode, and shall be enabled to continue sinking at a great depth without interruption from water. Annexed is an explanation of a sketch of work done, as follows:—1. Course of the lode in the adit level.—2. Winze sunk on the course of lode. 3. Cross-course.—4. Lode heaved, and its continuation. 5. Cross-cut to intersect the lode 8 fms. below the cross-course; the appearance of the lode here at the cross-course holds out such promise, that I am led to believe we shall get copper at a shallow depth.

**WHEAL MARY ANN.**—Pollard's shaft is sunk 10 feet under the 50 fm. level; the ground is hard, being still in the elvan course. The lode in the 50 fm. level, north of this shaft, is 3 ft. wide, and worth 4*s*. per fm.; in the same level south it is 2 ft. wide, and worth 4*s*. per fm. The lode in the 40 fm. level south is 1 ft. wide, and worth 4*s*. per fm. The lode in the 30 fm. level south is as last reported. The lode in the 60 fm. level, south of the boundary, is 4 ft. wide, and worth 1*s*. per fm. The lode in the 50, south of this shaft, is 3 ft. wide, and worth 6*s*. per fm. The stopes are looking well, and producing a fair quantity of lead. We sampled on Saturday last a parcel of lead ore, computed 65 tons, for sale on 27th inst.

**WEST WHEAL JEWEL.**—In the 57 fm. level, west of Williams's cross-course, on Wheal Jewel lode, the lode is producing some good ore. In the 47 fm. level, east of ditto, on the same lode, the lode is worth 4*s*. per fm.; in the deep adit, west of Williams's cross-course, on the same lode, the lode is producing stones of ore. In the deep adit, west of Tregoning's shaft, on Tolcarne tin lode, the lode is producing stones of tin. In the stopes in the back of the 12 fm. level, west of Pryor's winze, on the same lode, the lode is worth 10*s*. per fm. In the stopes east of this winze, in the back of the same level, the lode is worth 11*s*. per fm.; in the stopes in the bottom of the 12 fm. level, east of Tregoning's shaft, the lode is worth 16*s*. per fm.; in the stopes in the bottom of the 12 fm. level, east of the whin shaft, the lode is worth 18*s*. per fm. These stopes are working on tribute.

**WHEAL PENHALE.**—The ground in the engine-shaft is somewhat easier when last reported on, and though the lode is from 6 to 8 ft. wide (requiring to make the shaft double the width we otherwise should), we have, nevertheless, made greater progress in sinking this week than for some time before. At no other point in our tuftwork department can I notice any particular change since my last; but the tribute pethers continue to hold out their (former reported) very cheering appearances.

**WHEAL TRELLAWNY.**—The lode in the 82 fm. level, north of Phillips's shaft, is 5 ft. wide, and worth 16*s*. per fm. The lode in the 72 fm. level, north of this shaft, is 3 ft. wide, and worth 10*s*. per fm.; in this level south the lode is 2 ft. wide, and worth 9*s*. per fm.; the stopes in the back of this level are still very productive. The lode in the 62, north of this shaft, is 4 ft. wide, and worth 16*s*. per fm.; in the stopes in the back of this level, both north and south, are usually productive; the lode in the whin sinking under this level south is 2 ft. wide, and worth 8*s*. per fm. At Trellawny's shaft, since our last report, we have altered the drawing lift to a plunger from the 52 to the 22 fm. level; consequently the water has prevented our intersecting the lode in the 72 to the extent we otherwise should; however, we have opened and bored into it about 4 ft., about two of which produce lead and can. The lode in the 52, north of this shaft, is 2 ft. wide, and worth 9*s*. per fm. The stopes in the back of this level, both north and south, are still usually productive. The stopes in the back of the 12 are also usually productive. At the north mine the lode in the 55, north of Trebene, is 3 ft. wide, and worth 10*s*. per fm. The lode in the 45, north of Trebene, is 2 ft. wide, and worth 6*s*. per fm. Smith's shaft is sunk 1*s*. 1*f*. under the 40 fm. level; the lode in the bottom of the shaft is 3 ft. wide, and worth 9*s*. per fm. The stopes in the back of this level, both north and south, are still usually productive. The stopes in the back of the 12 are also usually productive. At the north mine the lode in the 55, north of Trebene, is 3 ft. wide, and worth 10*s*. per fm. The lode in the 40, south of this shaft, is 2 ft. wide, and worth 5*s*. per fm.; at this level north the lode is 2 ft. wide, and worth 5*s*. per fm. The stopes in the back of this level, and those of the 30, are usually productive. On Tuesday last we sampled a parcel of lead ore, computed 108 tons, which will be sold on the 23d inst.

**WHEAL TRESCOLL.**—Since my last report, we have cut a very rich course of tin in B lode, No. 2, going west; the work is estimated to be worth 12*s*. a kibble; we have this course of tin about 5 fms. in length, and appears still to be going west. It is the course of tin last, of which I think there is no doubt; we shall make a large profit on this. We have taken these last three days from this course, the tin 100 fms. long, and dressed the same for market. We have also good courses of tin east, on B lode, No. 1—in fact, we have good tin ground all through the mine. We have not been sinking the shaft this week, the shaftmen having been engaged putting in bearers and casters, and fixing the lift in it; but shall begin to sink again on Monday next, ground fair. We have also set to drive east on the caunter lode, at 50s. per fm., where it is 6 ft. wide, composed of gossan, thickly impregnated with copper; this will form a junction with the north lode about 20 fms. further east, and is a very important consideration in this speculation. We have likewise set to drive directly south, to cut the south lode, just at that point where those splendid specimens of copper were taken from in the level above. On the whole, this is the most presumptive evidence for believing that, with a little more outlay, this mine will stand conspicuous amongst those paying mines whose shares are so eagerly sought after, at a very high premium. Whatever may have been the misrepresentations of any prejudiced shareholder against either of the agents, they are prepared to prove that no exertion on their part to economise the incidental expenses of the company, and, at the same time, to embrace in their operations the saving of time, has by any means been either omitted or neglected by them.

**WHEAL VINCENT.**—I mentioned, in my last report, that we had cut the south lode several fathoms farther west than ever seen before, but had not cut into it sufficient to report on. I am now happy to inform you that we have cut through it, and it is very rich indeed. We have taken down about 4 ft. of it, which is now at surface, a great part of which is nearly half tin; the composition of the lode is such as to expect an improvement in depth. In stopping east of the shaft there has been but little of the lode taken down, which will be done by another week, but what we have taken down is very good. The stopes to the west of this shaft are still producing good work. In stopping on the north lode we are still breaking moderate work; the men are now engaged in taking down the lode. The ground in the cross-cut, north of the engine-shaft, is still favourable for driving. The surface water is increasing, so as to enable us to get on with greater force. We have commenced stamping the tributaries' work, and find it to turn out according to our expectations. Our new stamps are engaged in beating down its bed, &c., so as to commence stamping the work from the north lode. We hope to have sufficient water shortly to drive it at full speed.

## FOREIGN MINES.

**BOLANOS MINES.**—The following report was received on the 22d inst.—

**EL BOEZA.**—July 4.—In handing you the mining report of this negotiation for last month, I beg to inform you, that in Taylor's cross-cut 5*s* varas only have been driven during the month, in consequence of having cut on the 9th June a branch or a leader of quartz from the main lode, which brought such a quantity of water, and made the cross-cut so very wet, that we have had the greatest difficulty in blasting, and has considerably impeded our progress. The driving has, however, been continued regularly, with the exception of 2*s* days' hindrance, which took place on the 23d June, in consequence of the breaking of the bolts and gland of the equilibrium valve, which caused a stoppage of 24 hours to the engine, the water in the meantime rising in the shaft 5*s* varas above the head of the cross-cut, and which required 36 hours to drain (the engine working about nine strokes per minute), before the barometers could again register their work. The coming water for the engine at present is about 5*s* strokes per minute. The weight of water being now considerable, and likely to increase a good deal as we get into the main body of the vein, I am very anxious to commence the balance-bob, the want of which we have already felt, and

hand and the arrears of call on 285 shares. The two last items may be set down in round numbers at 30,000£; then we have to add the trifles over 1,100,000£ of admitted expenditure, and the sums paid back to the company in hard cash by the owners of Mellado, La Luz, and Guadalupe (Catorce). These last sums, amounting in the aggregate to about 70,000£, have been, to all intents and purposes, spent twice over; and the account fairly stands as follows:—Admitted expenditure, 1,100,000£, and a trifles over; cash repayments from native owners, 70,000£; assets in hand and arrears of call, 30,000£; equal to 1,200,000£.

4. With respect to La Luz. The owners of this mine were under a legal obligation to repay the outlay on St. Bernabé; and the error was merely one of entry, copied, by-the-by, from an Anglo report. The fact, I believe, is that La Luz is a small mine, belonging to the same mining pertinencia at St. Bernabé; and, if this be so, it follows that, had not the directors abandoned St. Bernabé, the company would not have lost La Luz.

5. The observations I made on the Zacatecas adventure, have not been gainsaid; and, if it be true "that the failure arose from causes, in a great measure out of the control of the directors," all I have to say in reply is, that the directors had no business to speculate with other people's money, without having a proper control over the speculation." The would-be accurate secretary, however, leaves unnoticed one omission I made on this subject. Originally, the Anglo-Mexican Company had, as I stated, an interest to the extent of 4000 shares in the Zacatecas Company; but by some hocus pocus, the former company was eventually saddled with 5040 Zacatecas shares.—(See *Anglo-American Report*, A.D. 1842, page 17.)

6. I never said Asuncion was an *unproductive* mine; but I classed it rightly among those worthless, or worked-out mines, the expenditure on which had exceeded the receipts; and I repeat that all mines are worthless, to the workers at least, when the outlay, during a long series of years, has in the aggregate been plus—the receipts minus.

The secretary's concluding puff on the acting board is mere *bosh*—in fact, the absurd *augurios* so often blazoned forth in annual reports have only been equalled by the utter lack of judgment and of practical knowledge that have characterised most of the directorial proceedings; and whatever may be the other qualifications of the acting directors of the Anglo-Mexican Mining Company, posterity, if it ever descends to remember them at all, will certainly not class them as men of business among those "whose memory lives in their merits."

Qui sui memores, alios facere merendo.

Charles-street, St. James's, August 22. CHRISTOPHER RICHARDSON.

Sir,—Although I have received no instructions from the board to reply to the letter which you have addressed to the Editor of the *Mining Journal* on the affairs of the above company, I think it my duty to correct some of the misstatements embodied in that letter.

In the first place (though, of course, this is not a material circumstance), your father is not now the largest registered proprietor in the company; that distinction belongs to our worthy chairman.

2. The appointment of a committee for winding up the affairs of the association, composed of one moiety of directors, and one of non-directors, is simply required by the *Deed of Settlement*, and the directors are bound to take that measure. It is not, and was never intended to be, a "committee of investigation." In respect to the nomination of this committee for dissolution, it rested with the shareholders to approve the list of persons selected, which they did unanimously. Not one of the parties selected has any connection with the directors, and they were chosen, partly on account of their large stake in the company, and partly for their past attention to its affairs. With respect to an ex-auditor being included, I cannot help thinking that having been accustomed for years to act in that capacity as a check on the board, no less objectionable appointment could be made.

3. You have overstated the amount of capital sum since the formation of the company. Including the premium on the original shares, the amount is but a trifles over 1,100,000£.

4. The mine of La Luz, in Guanajuato, was never worked by the company, and that fact has been more than once stated in the printed reports. San Bernabé was worked and abandoned, and the debt incurred on it was repaid out of the profits yielded by the mine of La Luz, belonging to the same owners.

5. In regard to the money invested by this company in the Zacatecas Mines, there is no doubt that, owing to causes, in a great measure, out of the control of the directors, the undertaking proved an almost entire failure—i. e., a loss of 42,105. out of 51,105. The board, however, had every reason to believe the mines to be valuable ones, and, under other circumstances, it is probable the speculation would have answered. One of the mines has, if I have been rightly informed, yielded good results since it was given up by the Zacatecas Company; but the capital of the latter was, as you are aware, nearly exhausted, and there was no alternative but to desist.

In regard to the charge against Mr. H. in 1843, the matter was investigated at the time, and the party considered to be exonerated. He did not resign on that occasion. You have classed Asuncion with the unproductive mines worked from time to time by the company; but, in fact, although it has not repaid the entire sum spent on it, it has reduced it very considerably since 1843, and it was the profits from this mine chiefly which enabled the board to pay off the additional capital raised in 1840. In conclusion, I must remind you that ample opportunities have existed, year after year, for arranging the conduct of the directors, and appointing, if it were thought expedient, a "committee of investigation;" but the good faith and integrity of the board has never been impugned; at least, I can speak for 21 annual meetings which I have attended; on the contrary, a vote of thanks has always been awarded to them. It is true that complaints have been, within the last two or three years, uttered that the company was still kept up; but the explanations have been considered satisfactory, and the discretion of the directors in that, as in all other matters, left unfeared. I must repeat that I have written the above without any authority from the board.

Anglo-American Mining Association, August 14.

ALFRED GODFREY.

BOLANOS MINING COMPANY.

Sir,—In the *Mining Journal* of Saturday last, your correspondent "T" gave a general history of the Bolanos Mining Company from the commencement; winding up by denouncing, as an absurdity, the abandoning the El Bote negotiation at the present juncture. So far, so good. An absurdity it is most assuredly. But why? Singularly enough, your correspondent omits to give more than a sort of *en passant* reply to this. Be it, therefore, my task to enter more minutely into this, to all concerned, most interesting subject.

In the first place, the very inadequate sum of 5000£ was advanced for the working of El Bote. This "T" has told you; but can it be too often repeated? Despite the meagreness of its resources, however, the mine in but little more than two years yielded a profit of 50,000£. The continuance of this prosperity was, in the minds of the proprietor, so far beyond the reach of a doubt, that they had not even the remotest idea of a draw back; and, the consequence was, that when such natural difficulties arose, as an over abundance of water, temporary fluctuations in the quality and quantity of the ore, &c., to which all such mines, in Zacatecas especially, are subjected, at a certain depth, instead of reflecting that now was the time to render aid, or of, at any rate, cheering on the directors to a renewal of their exertions, the shareholders gave way to the most unjustifiable despair of the concern ever again showing profit, and this too in the very face of the most promising indications a mine could afford. The universal outcry was, "that's the way with all these cursed mining undertakings; this month one's expectations are raised to a pitch bordering on frenzy, only the next to more than fail of realization." This feeling, too, was strengthened by the dissolution of the Real del Monte Company, under widely different and less encouraging circumstances. The result, however, in that case has proved that, with a little perseverance, the shareholders might now be deriving the benefit of the profits the new company in Mexico are making.

But to my subject—Bolanos. The directors pressed onward, battling manfully with every new and more formidable difficulty as it arose; and anxious to avoid the necessity of calling upon the but too evidently unwilling proprietor for monetary aid, they persevered in the sinking of shafts, opening new ground, erecting an engine on San Genaro shaft, undertaking to convey that engine and other machinery from the Bolanos to the Bote, which, after encountering numberless and almost insurmountable difficulties, they effected; erecting engine-houses, boiler-houses, also brick kilns, blacksmith's shops, store-sheds, and buildings of every description, in addition to the necessary and necessarily expensive dead works underground. All this, and much more has been done, the mine, or rather a small portion of it, paying the expenses.

To expect, however, that, unassisted by the shareholders, and bending beneath the burthen of oppressive edicts on the part of the then most tyrannical Government on earth (the Mexican Government), the directors would eventually triumph, was, beyond measure, absurd. Considerable rancour, however, was displayed by the adventurers (?) when, on at length discovering their inability to proceed, the directors ventured to divulge the extent of their difficulties, and to point out the urgent necessity for instant relief.

Now, Sir, herein lies the absurdity. Here is one of the most promising mining properties in Mexico. All necessary erections, including an excellent engine, are effected, and just when the proprietors may be expected to reap the reward of their directors' efforts, they are for sending the whole affair to the devil at once, thereby rendering fruitless all the labour and money expended on it, and leaving it to the original owners to derive the benefit of such an expenditure; all because, forsooth, they are asked to see their own interests in advancing a comparatively small sum, to avert such a catastrophe as the total dissolution of the company. As regards the new issue, the preface of the shares have, before the public, been offered to the original owners, and the result has been a total failure. What now remains to be done? Either to offer it to the public as much as to the old shareholders, which almost amounts to their entire exclusion, or to dissolve the company. That the adoption of the latter alternative may not be inevitable, is the wish of your subscriber—

B.

ST. JOHN DEL REY MINING COMPANY.

Sir,—It may fairly be assumed that the letters I have lately addressed to you relative to the above company contain no false statements. Any inaccuracy of importance would, no doubt, have been contradicted through the columns of your Journal. I may have been misinformed on some points of detail, and, if corrected officially, should be happy to retract any assertion founded on such information; but no opinion, come from what quarter it may, will shake my firm belief that operations at Morro Velho have not been carried on so as to ensure lasting profits from the mine. So long as profits are large neither shareholders, directors, nor, apparently, managers abroad, consider well the source of the returns, or their probable duration. The answer to every ob-

\* I have a right to presume that the whole outlay on Guadalupe has been repaid, as it was in a regular course of repayment, when last referred to in the Anglo report.

servation tending to show the hollowness of present prosperity is—Look at the splendid produce—the glorious produce! I am so well aware of this amiable weakness that I fully expect the returns for May, of which the first 20 days are received, will be thought a full and crushing refutation of this letter. The profit for May will no doubt be good, and as will that for June, if the refuse heap last so long; when that heap is exhausted, the stamp will be thrown entirely upon the mine for supply of ore. This will have one good effect—rendering it easy to ascertain exactly how much the mine really does give. At present it is apt to take credit for more than its due, in this fashion—6000 tons are stamped in a month; the mine says, I sent 6875 wagons, which is equal to 5500 tons; therefore, the refuse heap gives 500. Thus every interest which has a defender is complimented on its energy. The mine performance is highly meritorious, the stamp behaved nobly, and the friendless refuse heap is credited the balance. In this there is no exaggeration; the mine account is infallible. In December, 1847, the best and most efficient of the company's officers was removed from the reduction-house, and consequently resigned, because the ore which he said was, and which proved to be, poor the mine agent found it convenient to call good.

The question of paramount importance is, what will the produce be after the total consumption of the heap of rejected ores? I will take the number of borers to be the same as last year, 1846 (and I believe the average is likely to be less in 1849, as many have died, and at present it is impossible to hire); taking the duty they are stated to have done in 1848, we have 61,672 tons, or 5140 tons per month; thus, at 8-6 octaves (the yield of 1848), we have a produce of 18,500 tons, barring accidents, to follow the 22,000 and odd which have dazzled the understandings of Tokenhouse-yard. This estimate, based upon the correctness of the returns of ore supplied by the mine and refuse heap, does not promise very flattering dividends, when costs in Brazil are nearly 6000£ per month. How much worse will matters be if the mine has had credit for more than it gave. That there is some reason to fear this, can be shown by referring to the past reports of the company. At the end of 1842 there was a very large accumulation of rejected ore, more than 6000 tons; but not having this report, I will, to be on the right side, say—

	Tons 3000
In 1843 were rejected	3654
	6664
1844      "      Tons 1084	1715
"      bought in      2793	off
1845      "      3115	4949
rejected      1112	2003
	2946
1846      "      2224	3656
1847      "      1512	
1848      "      2224	

In April, 1849, 462 tons were bought in, and for 20 days, in May, 500 tons: making 962 tons—leaving in all 9376 tons as existing in the refuse heap, at the time the superintendent expresses his regret that it is fast disappearing. If he be correct, it is as clear as two and two make four, that the mine has gathered many thousand tons of ore which the rejected heap supplied. I have long thought this was the case, but knew it was useless attempting to open the eyes of those interested on this side until the veil was torn off on the other. If I have felt averse to give an opinion on the management at Morro Velho, until the effects of mismanagement became apparent, still more averse am I to be personal in my remarks as to the causes which have led to the present state of affairs. The will alone, not power, is wanting; and if the truth of anything I have written be denied, I ask only for a fair field and no favour—this your columns will supply.

VERAX.

ESTIMATED COST AND PRODUCE OF WORKING A TIN MINE.

SIR.—Feeling a desire to become acquainted with the probable profits to be derived from a tin mine near St. Austell, in Cornwall, to work which a company is now in the course of formation in London, I applied to a mining surveyor, in Broad-street, and have received the following estimate of cost and produce of one year's workings, after the ground is opened, as a reply, with liberty to use whatever means I choose to ascertain its accuracy. Knowing your readiness at all times to render practical information for the benefit of your readers, I beg to solicit the favour of its insertion in your next Journal; whereby, perhaps, some of your correspondents may favour us with their comments thereon.—X. Y. Z.: Canterbury, August 20.

The mine is in the killas, and the ground stands without timber. From samples taken from the two great tin lodes, at the adit level, it has been found to make an average produce of 4 cwt. of tin to the 100 sacks of work; but as an allowance must be made for poor and unproductive ground, which in the best of mines will always occur, 3 cwt. to the 100 sacks may be considered the safer calculation. One hundred fathoms are to be driven at the 50 fathom level on each lode, which will give 80 fms. backs under the ancient workings. The lodes are 4 ft. wide, and carry tin throughout. There are many branches which will pay for working, but are not taken into account. A cubic foot of lode will make 6 gallons of work, which, at 16 gallons to the sack, is equal to 81 sacks per cubic fathom; then 200 fathoms  $\times$  30 fms.  $\times$  4 ft. = 1000 cubic fathoms  $\times$  81 sacks = 324,000  $\times$  3 cwt. to the 100 sacks = 486 tons of black tin at 40£ per ton = 19,440. Produce.

196 tons of tin, at 40£. . . . . £19,440 0 0

Cost.

The lode set on tribute at 10s. in the 17. or 50 per cent. . . . . £9720 0 0

Proportion of first working capital, 5 per cent. . . . . 972 0 0

Coals, engine, cost, and carriage, 5 per cent. . . . . 972 0 0

Driving additional levels and cross-cuts, raising air, and sinking whim-shafts, hauling deads, agents' salaries, 3d p. cent. . . . . 680 8 0

Timber and mine stores, &c., 1 per cent. . . . . 194 8 0

New machinery, wear and tear, 1*½* per cent. . . . . 291 12 0

Unproductive ground, 2*½* per cent. . . . . 486 0 0

Lords' dues, 1*½* per cent. . . . . 972 0 0

Management, 1*½* per cent. . . . . 291 12 0

14,580 0 0

Net profit . . . . . £4,860 0 0

Being at the rate of 25 per cent.

ABERGWESSIN MINING COMPANY.

At a meeting of shareholders, held at their offices, Bridge-street, Westminster, on Wednesday, the 15th inst., the following report from the directors was read:

We have much pleasure in meeting you on this occasion, as we are now enabled to congratulate you on the success which has attended your exertions, to prove whether lead ore does or does not exist in the property comprised in the leases held by this company. Mr. Couch, the purser, reports that the engine-shaft has been sunk 34 fms., and that a level has at 30 fms. been driven southwards 2 fms. to intersect the north lode, which it has reached, and is now being driven upon. Mr. Couch further reports, that the lode looks very kindly, and that he has driven east 1 fm., and west 8 fms. upon it, and that the lode improves as the works progress; and he further adds, that the 10 and 20 fathom levels are being driven east and west, with considerable improvement in the lode at each fathom. In the prosecution of the works considerable lead ore has been raised, which, when cleaned, will be productive of returns to the company. The directors have considered it prudent to obtain the opinion of Capt. Francis on the present condition and future prospects of the mine, and they now beg to lay his report before the shareholders. For the purpose of carrying on the operations of the company to the best advantage, it will be necessary to call up the remaining capital of 2*½* per share, and the directors propose to do this by instalments of 1*½* each, payable on the 1st of Sept. and 1st of Jan. next. The following report, from Capt. Matthew Francis, was then read:

Agreeably with your request, I have examined these mines; I find them situated in a line with, and doubtless upon, the great Nantymwyn lead lode, and the similar strata. The engine-shaft is sunk to a depth of 30 fms. under the adit; it is judiciously arranged, the site selected being a ravine or channel of a brook worn into the face of a chain of elevated ground; it would have cost 2500£ extra to have sunk the shaft to the same depth from the apex of the ridge of hills; the lode is attended by a large flock of racing clay, on the north or hanging wall, and the south part of it contains in considerable quantity sugar spar, lead ore, and blende, which I consider the almost certain signs of a good mine in this district. I would recommend the proprietors to sink the engine-shaft 10 fms. deeper, which will pass into the lode, and probably through it; this will cost 250£. Also to drive levels 400 fms. through the lode eastward and westward into the hills, selecting the 20 fm. level, in which, for the last 7 or 8 fms. westward, there is some very fine ore ground, and the 30 and 40 fm. levels, the cost of which will be 1600£, or together, say, 2000£. In all probability this work will lay open a sufficient section of the lode to invest the mine with an indispensible character of profit and stability, which I must add the proprietors deserve for their spirited trial. This calculation does not include the necessary dressing machinery, which will cost another 4000£.

CONDURROW MINING COMPANY.

The bi-monthly meeting of adventurers was held, pursuant to adjournment, at the account-house, on the mine, on 20th August, when the accounts submitted showed a balance in favour of the mine of 1807. 12s. 8d.—The labour cost for June and July was 10222 17s. 10d.; merchants' bills, 2701 11s. 8d.; dues on ore, 794 4s. 4d.; and black tin charged on account to end of May, 1007. 1472 13s. 10d.—On the credit side, ore and tin sold, 15847 6s. 1d.—showing the balance above cited. The accounts having been received and adopted, the following report from Mr. Nicholas Vivian, the purser, was read, when the meeting adjourned to the third Monday in October next:

August 20.—An account to day for June and July shows a profit of 1117. 12s. 2d., to which should be added the cost of a stamp of eight heads and appliances, say 120*l.*, included in the cost for these months. We continue to carry on extensive operations in timber—viz.: sinking Frys' shaft under the 80 fm. level, driving the 80 fm. level east and west, the 70 fm. level east and west, the 60 fm. level east and west, the 50 fm. level east and west, the 40 fm. and a cross-cut north from the 40 to intersect the Llandow's lode, which may be accomplished in the course of a few days; the 30 fm. level, the 10 fm. and the deep adit level east on the Llandow's lode, and the same east on the main lode; sinking Woolf's shaft under the deep adit, we have sunk this shaft perpendicularly 18 fms., that is from the shallow adit to the deep, 20 fms. under which level it will intersect the lode—this shaft will eventually become a good working shaft. Hope's shaft we have sunk 90 fms., the engine-shaft 30 fms., and Llandow's shaft 12 fms. The lode is 4 ft. wide in the shaft sinking below the 80, yielding a fair quantity of tin, and there is yet probably a great part of the lode standing to the north. The 70 east is poor, but we believe that

there is more lode to the north, the winze sinking under the 70 east there is a good

**GEOLGY.**—Persons wishing to become ACQUAINTED with this interesting BRANCH OF SCIENCE, will find their STUDIES greatly FACILITATED by means of ELEMENTARY VOLUMES, each, arranged and sold by TWO, FIVE, TEN, TWENTY, or FIFTY PENCE each, arranged and sold by

Mr. TENNANT, 3, STRAND, LONDON.

A COLLECTION for FIVE GUINEAS, which will illustrate the recent works on Geology, contains 200 specimens, in mahogany cabinet, with five trays—viz.:

MINERALS which are the components of rocks, or occasionally imbedded in them—Quartz, agate, calcareous jasper, garnet, zoilite, hornblende, augite, asbestos, felspar, mica, talc, tourmaline, calcareous spar, fluor, scolite, baryta, strontia, salt, sulphur, phlogite, bitumens, &c.

METALLIC ORES.—Iron, manganese, lead, tin, zinc, copper, antimony, silver, gold, platinum, &c.

ROCKS.—Granite, gneiss, mica-schist, clay slate, porphyry, serpentine, sandstone, limestone, basalt, lavas, &c.

FOSSILS from the Llandeilo, Wenlock, Ludlow, Devonian, carboniferous, lias, colliery, warden, chalk, plastic clay, London clay, and crag formations, &c.

Mr. TENNANT gives PRIVATE INSTRUCTIONS in MINERALOGY, with a view to facilitate the study of Geology, and of the application of Mineral substances in the Arts, illustrated by an extensive collection of specimens, models, &c.

## SCHOOL OF MINERALOGY, CHEMISTRY, AND GENERAL SCIENCE.

MESSRS. NESBIT'S ACADEMY, 39

No. 38, KENNINGTON-LANE, LAMBETH, NEAR LONDON.

In this SCHOOL, in addition to all the branches of a good education, EVERY FACULTY IS AFFORDED for obtaining a knowledge of ANALYTICAL CHEMISTRY and NATURAL SCIENCE, as applied to the Arts, Manufactures, and Agriculture.

The pupils are practically taught in the Laboratories, which are fitted up with every essential for the most extensive chemical investigations.

Mr. Nesbit's works on Land Surveying, Mensuration, Gauging, Arithmetic, English Parsing, &c., may be had of all booksellers.

References.—Dr. D. B. Reid, F.R.S.E., &c., House of Commons, Westminster; R. Prosser Esq., C.E., Birmingham; J. L. Bullock, Esq., Editor of *Fresenius's Chemical Analysis*, Conduit-street, Regent-street; J. Gardner, Esq., M.D., Editor of *Liebig's Letters*, &c., Mortimer-street, Portland-place; and W. Shaw, Esq., Strand, London.

## MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

**TREBELL CONSOLS,** in the parish of Lanivet, holds out great promise of becoming a prosperous and standing mine; the lode, upon which there are four men working, only 5 fms. below surface, is producing very rich work for tin. A water stamp is to be erected on a small scale, within half a mile of the mine, which will enable the shareholders to bring their tin to market; meanwhile, by exploring the other lodes, they will ascertain the proper position for a steam-engine, which will answer the two-fold purpose of drawing water and stamping.

The SOUTH JOSIAH MINE has this week been visited by some of the most eminent practical miners and agents in this neighbourhood, the general opinion being, that it is one of the most kindly things which has been discovered in this neighbourhood since Wheal Maraz. There is a lode from 4 to 5 feet big, producing more or less mundic and beautiful yellow copper ore; the leading part of the lode is from 1 ft. to 18 in. wide, all good work fit for the pile; the lode altogether will produce from 3 to 4 tons of copper ore to the fathom. The situation of the mine is south from Wheal Josiah, on the Cornwall side of the River Tamar; they have driven their adit about 30 fathoms, and this has given them about 12 fms. of backs; they have a hill before them that will give 80 fms. of backs from their adit level. The river divides the Devon Great Consols Mine from South Josiah. The mine is divided into 256 shares.

**SMELTING IN SPAIN.**—For some period several parties in Spain have beneficially turned their attention to the smelting of the slag heaps which have been left from old workings long since abandoned. In the neighbourhood of Fuenclaire there are heaps of about 400,000 quintals of slag of an average per centage, being the refuse of carbonates and sulphates of copper; there are others at San Lorenzo, Mestanza, and Almodorar, in the province of La Mancha, which contain from 20,000 to 50,000 quintals of a medium quality. At San Celestino, near Almeden, the slag heap is about 90,000 varas square, and is estimated to contain 500,000 quintals of different qualities; a great portion of this, however, very compact and poor, but some of it is porous, and prills of malleable lead are often found. Although these establishments are on a smaller scale than those already established in the southern provinces, it is expected they will return a remunerating profit.

**ON THE MANUFACTURE OF ENAMELLED COPPER AT CAXTON.**—When the copper has been shaped into the desired form, it is to be cleansed, but not scoured, and afterwards wetted with water, and sprinkled with the enamelling composition intended to form the ground, which may be either white or coloured. The article is then put in a muffle heated by means of dry Nankin coal (this is found to be the best fuel). When the ground has been produced, the article is withdrawn from the muffle, and covered with an iron bell, in order that it may cool shortly; the ground may be then ornamented in the same manner as porcelain, and again passed through the muffle. Several specimens of enamel, and colours upon enamel, have been deposited at the Royal manufactory at Sevres, in order that the manufacturers in this kingdom made be made acquainted with the art.

**MINING IN THE PHILIPPINE ISLANDS.**—In order to encourage the exploration of mines, the governor of Manila has promulgated a code of mining laws; these differ somewhat from those issued in the mother country. Grants of mines not employing four labourers, or working two months consecutively, or four months with interruption in the year, are liable to be revoked. The Inspector of Mines is under the immediate direction of the Captain-General of the Islands, and the General Direction of Mines in the Peninsula. The Tribunal of Appeal from the decisions of the Inspector, is composed of the Captain-General, the Superintendent of the Royal Hacienda, the auditor of the Royal Audiencia, and the Comptroller of the Tribunal of Accounts.

**THE MINES OF CALIFORNIA.**—We believe there is no doubt that a proclamation was issued by General Smith, of the United States army, forbidding foreigners to dig in the mines of California; but we are led to understand that document, if not formally, has been at least virtually repealed, and chiefly because of the inability of the official in question to enforce his commands. At the same time we think it right to warn our readers that the will to enforce may be but dormant until the reception of the necessary strength to enforce, and not entirely dead.—*Times*.

**A Man Crushed to Death.**—As Robert Adey was waiting with several others at the bottom of the shaft of Haswell Pit, in order to be drawn to the bank, the cage having been lowered to within a yard of the bottom, the deceased attempted to get into it before it had reached the ground, and, being in such imprudent haste, put his head and shoulders beneath the cage, instead of between the bars, and the cage at that moment having descended to the ground, he was severely crushed over his head and shoulders, and died immediately.—*Durham Advertiser*.

**YORK, NEWCASTLE, AND BERWICK RAILWAY DOCKS.**—At the meeting of the proprietors at Sunderland, on Monday, the report stated that the main dock, now nearly completed, would be opened in the course of the year, and resolutions were passed empowering the directors to conclude an agreement with the railway company for the shipment into the docks of all coal and other merchandise brought over their Durham, Sunderland, and other branch lines.

## COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

Carr's Hartley 15 6—East Aair's Main 13 6—Holywell Main 15 9—New Tanfield 13 9—Ord's Redheugh 14—Havensworth West Hartley 15 6—Tanfield Moor 13 6—Towney 15—West Wylam 14 6—West Hartley 16 6—Wylam 15—Walls' End Acorn Close 16 6—Brown's 14 9—Bensham 15 3—Bewick's and Co. 16—Brown's Gas 13 6—Gosforth 15 9—Gibson 15—Hilda 15 3—Hartley 15 9—Hedley 15 6—Northumberland 15—Riddell 15 6—Wharcliffe 15 9—Eden Main 15 9—Lambton Primrose 17—Bradly 17 6—Henton 18—Haswell 18—Hutton 16 3—Jonasohns 15 6—Lambton 17 6—Lamley 16—Morrison 15 6—Eassel's Henton 17 6—Stewart's 17 9—Whitwell 16—Caradoc 16 6—Howden 16—Hartlepool 18—Hengh Hall 16 3—Heselden 16—Kelloe 16 9—South Hartlepool 15 3—South Kelios 16—Thornley 16 9—West Hartlepool 16 6—West Henton 16—Adelaide Tees 16 9—Cowdon Tees 16—Denison 15 9—Seymour Tees 16 3—South Durham 15 9—Tees 17 9—Derwentwater Hartley 16 6—Garnant Stone 22 6—Hartley 16 6—Nixon's Merthyr 21—Sidney's Hartley 16 6—Ships at market, 225; sold, 155.

**WEDNESDAY.**—Carr's Hartley 16—East Aair's Main 13 6—Ord's Redheugh 14 6—Ravensworth's West Hartley 15 6—Towney 15—West Wylam 14 9—West Hartley 16 6—Wylam 15 6—Walls' End Brown's 14 6—Bensham 15 3—Bewick's and Co. 16—Brown's Gas 13 6—Hilda 15 3—Morrison 15 6—Percy 15—Sacristan Gibson 15 3—Walker 15 6—Eden Main 15 9—Lambton Primrose 16 9—Henton 17 9—Hawes 18—Lambton 17 3—Flumstone 17 9—Stewart's 17 6—Whitwell 16—Cassop 16 9—Hengh Hall 16 3—South Hartlepool 16 3—West Bensham 15 3—West Henton 15 9—Whitworth 14 3—Richardson's Tees 14 9—Tees 17 9—Derwentwater Hartley 16—Garnant Stone 22 6—Hartley 16—Nixon's Merthyr 21 6—Ships at market, 125; sold, 95.

**FRIDAY.**—Bate's West Hartley 16—Carr's Hartley 16 6—Aair's Main 13 6—Ord's Redheugh 14 6—Hartley 15 6—Heselden 16—Walls' End Acorn Close 16 6—Walls' End Brown's 14 6—Brown's Gas 13 6—Gosforth 15 6—Gibson 15—Hilda 15 3—Hedley 15 3—Morrison 15 6—Percy 15—Sacristan Gibson 15 3—Walker 15 6—Eden Main 15 9—Lambton Primrose 16 9—Henton 17 9—Hawes 18—Lambton 17 3—Flumstone 17 9—Stewart's 17 6—Whitwell 16—Cassop 16 9—Hengh Hall 16 3—South Hartlepool 16 3—West Bensham 15 3—West Henton 15 9—Whitworth 14 3—Richardson's Tees 14 9—Tees 17 9—Derwentwater Hartley 16—Garnant Stone 22 6—Hartley 16—Nixon's Merthyr 21 6—Ships at market, 125; sold, 95.

**THAMES TUNNEL COMPANY.**—The number of passengers who passed through the Tunnel in the week ending Aug. 18, was—No. of passengers, 13,771.—Amount of money, £57 7s. 7d.

## Proceedings of Public Companies.

### MEETINGS DURING THE ENSUING WEEK.

THIS DAY . . .	Asturian Mining Company—offices, at One.
	Whitehaven and Furness Railway—offices, at One.
MONDAY . . .	Cornwall Railway—Town Hall, Truro—at Twelve.
TUESDAY . . .	Wiltshire, Somerset and Weymouth R'way—White Lion Hotel, Bath, Two.
	London and Blackwall Railway—London Tavern, at Twelve.
	East and West India Docks and Birmingham Junction Railway Company—offices, at Two.
	General Steam Navigation Company—offices, at Two.
	Tav Vale Railway and Dock Company—London Tavern, at One.
	Newport, Abergavenny, and Hereford Railway—London Tavern, Twelve.
	East Indian Railway—London Tavern, at One.
WEDNESDAY . . .	Kilkenny, Great Southern, and Western Railway—offices, at Twelve.
	Newmarket Railway—London Tavern, at One.
	Albion Assurance Company—offices, at Twelve.
	Phoenix Gas-Light and Coke Company—Bridge House Hotel, at One.
	Cheltenham and Oxford Railway—offices, at One.
	Belfast and County of Down Railway—offices, at Two.
THURSDAY . . .	New South-Western Steam Navigation Co.—Waterloo Station, at One.
	Direct London and Portsmouth Railway—London Tavern, at One.
	Sheffield, Rotherham, and Barnsley Railway—offices, at One.
	West Cornwall Railway—King's Arms Hotel, Westminster, at One.
	South Wales Railway—Paddington Station, at Two.
FRIDAY . . .	Eastern Counties Railway—London Tavern, at One.
	Oxford, Worcester, and Wolverhampton Railway—London Tavern, Two.
	Thames Haven Dock and Railway Company—offices, at One.
	Norfolk Railway—offices, at One.
	Timber Preserving Company (Payne's Patents)—offices, at Twelve.
	North Wales Railway—offices, at Three.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

**PESTH SUSPENSION BRIDGE.**—This splendid bridge is generally supposed to have been completely demolished during the recent events of the war operations between the Hungarians and Austrians, but, up to the present time, we are glad to learn from a correspondent on the spot, no serious damage has been done to the structure. The first retreat the Austrian army was obliged to make from Pesta, the general gave orders for the destruction of the bridge, and 60 cwt. of powder were placed on it, 30 cwt. on each side, or under the chains, with the view of breaking them. Both charges were fired at the same time; the person who superintended the arrangements and fired the charges, was literally dashed in pieces. The effect it produced on the bridge was the breaking down of the road, which consists of transverse cast-iron bearers, to a considerable extent. The vibration of the chains was very great, and continued for some length of time; but after the retreat of the Austrians, the bridge was again repaired. The Hungarians, however, were obliged again to retreat over the bridge, when Dembinski gave orders for its destruction. Mr. Clark, at Pesta, went to Dembinski, and remonstrated with him, and told him that it would be nothing to his credit, as a general, to destroy so fine a structure. The general told Mr. Clark that his orders were pre-emptory, but, after a great deal of negotiation, he consented that some of the bearers should be taken down, and put into boats, and taken down to the Island of Schutt, the boats to be scuttled, and sunk in deep water; this was done. Then came the Russian and Austrian armies, when the bearers were taken up, and the bridge again repaired. Several shots have struck the stonework in places, but no great damage is done.

**THE BRITANNIA BRIDGE.**—All the fond and desired hopes of a successful realisation of raising the monster tube of this stupendous bridge to its final resting-place are, for the next two months at least, suspended. A few minutes before noon yesterday week, the lower part of the cylinder of the huge hydraulic press on the Anglesea side burst with a tremendous explosion, and in its descent on to the tube, a height of about 84 feet, fell with a terrific crash. The press was at work at the time, and had raised the tube about 3 feet during the lift this day; and had it not been for the very urgent and precautionary means adopted, by packing and bricking under with cement as the tube was being raised, the most dreadful consequences were inevitable. One of the workmen was precipitated from a rope ladder running from the top of the tube to the recess in which the hydraulic machine was fixed; he was struck by the huge mass of iron in its descent, weighing nearly three tons, and now lies in a dreadfully crushed state. I greatly fear that he cannot survive many hours, as the medical attendant on the works considers that, on a close examination of his body, most of his limbs must be fractured, as well as suffering from dreadful internal contusions. Mr. Frank Forster, the resident engineer, with his staff, was quickly on the spot, and I am happy to add that no other accident has happened. This most disastrous affair is to be attributed entirely to a defective coating of the cylinder, and the raising of the tube will, consequently, be delayed some time, until the completion and fixing of the new one in its place. The tube is now raised about 21 feet from the base.—*Liverpool Journal*.—A correspondent of the *Times* says:—"The accident which has occurred at the Britannia Bridge has reminded me of Mr. R. Stephenson's report, submitted to the shareholders a few days back, in which the following passage occurs:—'The progress of the remainder will depend upon the lifting. In this latter proceeding there has been some delay, owing to an unsoundness in one of the large castings of the new hydraulic press in the Anglesea-tower, which occasioned so much leakage as threatened at one time to render a new casting necessary, which would have delayed for several weeks the process of lifting the tube, which has been, as you are aware, floated into its position for being raised. I have, however, the satisfaction of reporting that the leakage has been successfully stopped,' &c. Now, sir, when we consider that the casting alluded to is 11 inches in thickness, and worked at a pressure of between 8000 and 9000 lb. to the inch, and that it had, moreover, to raise a weight of 1800 tons, we may be sure it had no child's play to contend with. How, then, could Mr. Stephenson, for one instant, allow such an instrument to be used for such a purpose?"

**A NEW BRIDGE.**—We have been informed that a new bridge, on the principle of the Besons Bridge, over the Seine, near Paris, has been erected on the Reading, Guildford, and Reigate Railway, to carry a double line over a gully at Albury, the span of which is 50 feet. It consists of five light girders supporting a wooden platform. The weight of the girders, composed of wrought and cast-iron, does not amount to 10 tons. When tested, this remarkably light structure did not deflect in the middle more than  $\frac{1}{8}$ th of an inch, with one of the heaviest of the South-Eastern locomotives upon it, and at a speed of 40 miles an hour, the deflection was very little more than  $\frac{1}{16}$ th of an inch. The principle is the invention of Mr. Neville.

**THE HIGH LEVEL BRIDGE AT NEWCASTLE.**—This matchless structure, which is, like "our glorious constitution," the "envy and admiration" of the world, is now fast approaching to completion. The upper roadway was opened on Wednesday; and the lower roadway is so far advanced that, on the 2d inst., George Hawks, Esq., of the Gateshead Iron-works, being in Newcastle, and having to attend a council meeting at our Town Hall, drove along the bridge as the nearest road. On Saturday, the 11th inst., Capt. Laffan, the Government inspector, visited Newcastle, to survey and test the bridge prior to the opening. One of the three intended lines of railway had then been laid down, on the east side of the bridge; and along this, in the afternoon, a train ran to and fro for upwards of an hour, consisting of 18 waggon laden with ballast, and four engines and tenders—a Nasmyth and Gaskell, a Longridge, a Stephenson, and a Hawthorn. The total weight of the train exceeded 200 tons—a much greater weight, in all probability, than will ever pass along the bridge again. Messrs. T. E. Harrison, Hosking, W. B. Hodgson, Mackay, Fletcher, Charlton, and others connected with the railway and with the erection of the bridge, fearlessly took their stand upon the roadway, and were present at its trial, not doubting its success; and Capt. Laffan himself, had the bridge come down, would not have "survived to tell the tale." The impression made upon the structure by the train was so small as hardly to be appreciable. An attempt was made to measure the extent of the deflection, but without arriving at any certain result, it was so trifling; at the utmost it did not amount to three-tenths of an inch. We have stated that the bridge was "opened" on Wednesday. For reasons sufficiently obvious, there was no rejoicing, ceremony, or entertainment on the occasion. The "turning of a switch," by which the  $\frac{3}{4}$  A.M. train was diverted to the permanent railway, may be said to have constituted the "opening." But three or four extra carriages were attached, for the accommodation of those who wished to travel along the bridge in the first passenger train by which this feat was performed. The gentlemen already named were of the number; and also the Lord of the Manor (Mr. C. Ellison), with Lady Vernon, and Miss and Master Vernon, Mr. and Mrs. George Hawks, and Miss Hawks, Mr. George Crawshay (of the firm of Hawks, Crawshay, and Sons, the contractors for the erection of the bridge), Mr. James Alport, chief manager of the railway, Mr. William Kell, Mr. Ralph Dodds, Mr. Johnson, &c. One of the passengers by the train was Sir Launcelot Shadwell, the Vice-Chancellor; and among the spectators at the Gateshead station were Lord Campbell and the Baroness Stratheden, who were on their way to Carlisle.—*Gateshead Observer*.

**ENCLOSURE OR TUBULAR WOODEN BRIDGES.**—The first in date and merit is that of Schaffhausen, built over the Rhine, where the influence of that river's cataract, a couple of miles lower down, at Laufen, is felt in great force. From its firm construction, it was accounted the best wooden bridge in the world, though the flatness of the banks on each side offered no facilities, and the merit of its projection and construction is due to a common carpenter of the place, called John Ulrich Grubenmann, in 1757. Its entire length was 355 ft. 7 in., without support from below; its breath was 15 ft. 6 in. With the passage of an individual it vibrated sensibly, but was kept immovable and firm when heavily laden waggon passed over it. The same builder, in conjunction with his brother John, built another hanging and covered bridge in 1778, over the Limmat, near Wittenberg, with a span of 346 ft., and with some improvements and greater firmness than the Schaffhausen earlier one. Both were burnt in 1799 by the revolutionary hordes of France, retreating after a defeat by the Austrians.

In more modern times, the art of wooden bridge-building has been carried to great perfection in Hungary by the Austrian road architect, John Gross, who, in 1807-8, built a covered bridge over the Waag, in the county of Thurotz, on the principle of the former at Schaffhausen, which seems to have served as a general model. The most curious feature in these Magyar structures is their small cost; the above was built for only 35,000 gulden, or about £3000. So cheap is labour and indigenous material in that country, which may almost account for the obstinacy of the resistance offered by it to the Austrian arms, where men are so readily to be procured, and such immense woods exist, to cover a retreat, or to check the operations of an invader.

**CHEAP RAILWAY TRAINS.**—Two meetings have just been held in Manchester on this subject. At one, resolutions were passed by the church party condemning the practices of running excursion trains on Sunday for the recreation of the operatives; and at the other, resolutions were carried protesting against any such interference as injurious to the health and advantage of the people, the resolutions being embodied in the form of memorials to the railway companies.

**RAILWAY COMPENSATION CASE.**

## Current Prices of Stocks, Shares, &amp; Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.						
Bank Stock, 7 per Cent., 1993 63	—	—	Belgian, 4 per Cent., 87	—	—	—
3 per Cent. Reduced Ann., 93 3	—	—	Dates, 2 per Cent., 53 4	—	—	—
3 per Cent. Consols Ann., 93 4	—	—	Brasilian, 5 per Cent., 96 1 2	—	—	—
34 per Cent. Ann., 94 31	—	—	Chilias, 3 per Cent., 53	—	—	—
Long Annanies, 84	—	—	Mexican 5 per Cent., ex Cap., 27 1	—	—	—
India Stock, 104 per Cent., 250 2	—	—	Russian, 5 per Cent., 108 7 2	—	—	—
3 per Cent. Consols for Acc. 98 2 2	—	—	Spanish, 5 per Cent., 168 1 2	—	—	—
Exche. Bills, 10000, 1d. 46 3 per.	—	—	Ditto 3 per Cent., 34 1 2	—	—	—

MINES.—The amount of business actually transacted this week has not been extensive, still we consider the market firm.

Tincroft appears firm, although many transactions have not taken place. The reports from the mine are highly satisfactory, and the improvements progressive. Several bargains have been effected during the week.

South Tamar and Bedford have been in request, and in the former several transactions have been done at progressive advances on former prices. The lode in the shaft is improving, and they have a very good lode in the 30.

Trelawny, Mary Ann, West Caradon, South Molton, &c., have also been in request, sellers generally looking for higher prices.

East Wheal Rose, South Frances, South Bassett, and West Buller, continue to have inquiries.

At South Tolver they have cut the north lode in the 42, which is larger and more promising than in the 32. Upwards of 200 tons per month, we hear, is being laid open, whilst their sales are not more than 100.

Shares in the following mines have changed hands during the week:—Trelawny and Barrier, Trelawny, West Caradon, Mary Ann, Trebene, Bedford United, Camborne Consols, South Tamar, Kingsett and Bedford, East Tamar, Tincroft, Treboden, Tamar Consols, Esquar Llue, Mendip Hills, and Treleigh. The Bedford United meeting (adjourned from the 5th July) was held on Thursday last, when a dividend of 1000/- was declared, being 5s. per share. The cash account shows a balance of 15588. 6s. 8d. in favour of the mines, and the account of liabilities and assets represent the former at 8507. 4s. 2d., and the latter at 2872. 4s. 2d., independent of the ores sold on the day of meeting, estimated at about 950/- for the month of July. The agent's report is highly satisfactory, which was fully confirmed by the worthy chairman, who has recently visited the mine, and expressed himself highly gratified with the general prospects and management of the same.

Tredurrow bi-monthly account meeting was held on the 20th, when the statement of accounts showed a credit of 1802. 12s. 3d., including the balance from last account. The profit for June and July is about 111L, and some requisite machinery, &c., amounting to 120L, which has been included in the cost-sheets for the period. The operations are extensive, and every effort is being made to bring her into good working order. The lode in the shaft under the 80 is productive. In the winze sinking under the 70 east, the lode is worth 10 tons per fathom. The 70 and 80 west, and a winze under the 80, have good courses of tin. Other points are also looking favourable.

The Abergwesin meeting was held on the 15th, and a call of 2s. per share was found necessary. The report of Capt. Matthew Francis speaks favourably of the lode but considers an outlay of 6000/- for machinery, and extending the different levels, to more fully develop the lode, to be necessary, before any profitable result may be calculated on.

The directors of Camborne Consols, at their monthly meeting, held on Thursday, made a call of 12. per share. The mine is represented to possess many important and improving points.

At Wheal Sophia meeting, held on the 2d, a call of 5s. per share was made; a balance of 21. 2s. only being due to the purser.

At Wheal Friendship it is reported that a good discovery has been recently made; the south underlayer has been intersected in the 205 f.m. level, estimated worth about 50L per f.m. This mine being in private hands, we have not the usual facilities of obtaining much information respecting her; but we learn that, for upwards of 45 years, she has been, and still continues, a good dividend-paying mine. The net profit for the 45 years has been nearly 290,000/- This discovery will, we hope, place her in her former position of immense profits, as well as give greater encouragement to the several mines in the immediate locality. Tywarnhale and Nancekuke Mines, recently undertaken by the same management, are represented as being in a very satisfactory and improving position.

In foreign mines there has been a fair proportion of business done, especially in United Mexican shares, arising from the gratifying intelligence received by last mail. Copiapo, St. John del Rey, Cobre, Alten, and Australian have also been done.

Letters have been received by the United Mexican Company to the 9th of July. The report, which we give in detail, will be found highly interesting and gratifying to the shareholders, inasmuch that the profits have increased, and the expenditure diminished. The profit for the month of June is given at \$37,878—being an excess over May of \$21,375. They advise also that a remittance of \$20,000 to \$25,000 would leave the mines in about a week from date. In another column will be found a full report of the operations and prospects at all the mines.

Advices have also been received from the Bolanos Mines to the 5th of July. No improvement having taken place, and the mines represented in similar position as when last reported, we refer to the report in another column.

The Royal Mail steam-ship, *Aeon*, arrived on Wednesday last, bringing the West India and Mexican mails, and specie to the amount of \$1,926,615—value, 265,523/- on merchants' account. The Peninsular and Oriental steamer, *Hindostan*, arrived on Thursday, bringing on freight 157 packages of specie—value, 100,770/-

HULL, THURSDAY.—During the past week there has been very little passing in railway shares. Yesterday, and to-day, consequent upon the rumoured settlement of the Hungarian war, prices have ruled higher, and there has been more disposition to purchase; the York, Newcastle, and Berwick, however, have not participated in this advance, owing to the issue of the half-yearly account, showing a balance sufficient to pay 1s. 4d. per cent. for the last six months.

## RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length. 1849	Present annual cost. 1848	Price per share.	Traffic.			Returns 1848
				Div.	Traffic	Returns	
Aberdeen	33	16	1,000,547	193 4	£18	£629	
Belfast and Ballymena	37 2	37 2	193 4	55 *	25	55	£20
Birkenhead, Lancashire, & Cheshire	19	15	1,088,804	37	51	10,04	898
Birmingham, Blackbury, & West Yorks.	11	10	786,384	7	47	248	
Bristol and Exeter	75 1	75 1	2,650,490	65 3 1	4644	—	248
Caledonian	141	141	4,865,135	218 20 2	6,680	6021	
Chester and Holyhead	84	59	3,338,317	13	4	2880	2230
Dalziel and Dronfield	38 3	38 3	395,915	10	107	79	
Darlington and Stockton	73	73	1,000	1000	1000	881	
Dundee and Kingstown	47 4	47 4	54,454,554	19	61	12,6	
Dunoon, Perth, & Aberdeen Junc.	91 1	59 1	1,167,194	2 *	891	545	
East Anglia (Lynn to Ely)	25 1	24 9	2,698,519	16 1 2	3,856	1358	
East Lancashire	32 2	20 5	12,97,060	85 1	15790	15099	
Eastern Counties and Norfolk	50 1	50 1	1,712,703	13	1507	13	
Edinburgh and Glasgow	57 2	52 4	2,624,378	39 9 6	8,896	4423	
Edinburgh and Northern	78 3	74	2,839,115	102 2	9,650	2239	
Glasgow, Paisley, & Greenock	102 2	74	2,574,330	46 3	3,510	2666	
Gt. Northern and Lincolnshire	23 2	23 2	848,328	16 2	1510	1304	
Gt. Southern & Western, Ireland	136	136	4,255,171	84 4	51	2412	
Great Western	163 1	161 1	3,172,919	31 4	67	4264	
Lancaster and Carlisle	230 2	206 1	11,608,515	77 56	17,304	23,539	
Lancashire and Yorkshire	206 1	127 1	9,218,450	52 56	1749	2349	
Liverpool, Crosby, & Southport	13	13	54,455	4	199	299	
London and North Western	435 428	25,077,942	130 29 7	46,604	46,405		
London and Blackwall	51	4	1,299,675	32 25	—	1260	
London, Brighton, & South Coast	170 162	6,882,281	37 4	21,275	11,275		
London and Euston	216 1	194	7,510,689	34 5	12,131	11,831	
London and Euston	141	141	17,102	16	144	159	
Manchester, Sheffield, & Lincolnsh.	199 1	6,049,679	33	5	5,144	3899	
Midland Company	47 1	42 3	14,912,340	68 24 4	24,678	24,401	
Midland Great Western (Irish)	50 36	72,332	244 4	11,12	806	806	
Monklands	37	37	500,000	6	683	—	
North British	109 2	6,449,056	13	41	36,644	3073	
Scottish Central	45 1	1,364,228	22	7	18,09	1222	
Shrewsbury and Chester	48 2	963,618	12 5	1,035	903	—	
Shropshire Union	30	—	—	24	313	—	
South Devon	37 2	1,909,232	12 13 5	1847	1864	—	
Taff Vale	163 163	8,116,914	228 4 51	13,000	10,637	—	
Ulster	40 40	8,710,510	228 4 51	15,689	1639	—	
West Cornwall	36 36	723,829	45 1	1312	808	—	
Whitehaven Junction	13	13	150,879	9 3	930	198	
York, Newcastle, & Berwick	269 242	6,827,949	193 4 7	13,971	14,407	—	
Tork and North Midland	255 234	4,983,618	286 7 7	9495	10,226	—	

## FOREIGN RAILWAYS.

Names of Railways.	Length.	Present annual cost.	Price per share.	Div.	Traffic	Returns
Amiens and Boulogne	76 1	1,462,562	64 2 2	1587	1542	—
Dijon	90	—	—	—	933	—
Dutch Rhenish	57 4	57 2	—	64	—	1384
Montevideo and Troyes	71 2	71 2	—	—	1021	—
Northern of France	211 211	7,142,890	32 dis.	—	16,654	11,257
Orleans to Bourges (Central)	107 107	1,229,848	4	6339	3866	—
Orleans to Tours	72 72	600,000	32 6	3,179	2726	—
Paris and Orleans	82 82	2,011,720	30 8 3	16,554	13,517	—
Paris and Rouen	85 85	2,062,916	21 20 5	8,030	5646	—
Rouen and Havre	59 59	—	2,272,176	10	3148	2490
Strasburg and Basle (monthly)	88 88	—	—	6	—	—
West Flanders (ditto)	59 59	—	—	13	—	—

\* Per cent.—† Interest.—Total for last week, £260,185, being an increase of £27,390 over last year.

## RAILWAY AND COMMERCIAL GAZETTE.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

BRITISH MINES.

Shares. Company. Paid. Price.

1000 Abergwesin ..... 8 5

## NOTICES TO CORRESPONDENTS.

We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

F. Thorley (Preston).—The Languedoc Canal connects the Bay of Blasac with the Mediterranean. It commences in the port of Cete, in the Bay of Lyons, from which it proceeds, in a westerly direction, through the Lake of Thau, passing by Aigues, Beziers, and through a tunnel of 181 yards at Malpas, thence to Sornal to Carcassonne. From this the *canal* is north-west, by Castelnau, to Nauvouze, which is on the summit level, and to this it has ascended in all 62½ feet, by 74 locks. The remainder of the *canal* continues north-west, to its termination in the River Garonne, at Toulouse, with a total descent of 207 ft., by 26 locks. The entire length is 241, 146 metres, or about 148 miles; breadth at top, 61 feet; at bottom, 34 feet; with a depth of 6½ feet. The total length of the feeders is about 49 miles. It was commenced in April, 1861, and finished in June, 1861. The works are said to have been planned and conducted by an Italian engineer, Francis Andreosey, under the direction of Paul Requetti, intendant of the province.

G. T. (Cornhill).—The discovery of circular polarisation in quartz, was made by M. Arago, in 1811. By transmitting polarised light along the axis of the prism, he observed the tints to be different in their nature from the ordinary tints of the mineral, although they increased and diminished with the thickness of the plate. When analyzed with a prism of Iceland spar, he observed the true images, descending in Newton's scale as the prism was turned round, so that if the colour of the extraordinary image was red, it became in succession orange, yellow, green, and violet; and hence he drew the important inference that the differently coloured rays had been polarised in different planes in passing along the axis of the crystal.

G. Mountjoy (Canada).—In Germany, the furnaces used for refining the copper are of several descriptions. The one most common is that called the "Kupfergrahreid." In this the copper from whence the silver has been taken is refined. The blast oxidises the foreign metals—viz.: the lead, nickel, cobalt, and iron, with a little copper, forming the "gahrsag," which is at first rich in lead oxide and poor in copper oxide, but at the end this order is reversed. The slag, at first blackish, progressively assumes a copper red tint. The slag flows off spontaneously through a channel from the surface to the hearth. The "gahre" is tested by means of a proof rod of iron, called "gahreisen," thrust through the tuyere into the melted copper, then drawn out and plunged into cold water. As soon as the "gahrsag" (scale of copper) appears brownish red on the outside, and copper red within, so thin that it seems like a not work, and so deficient in tenacity that it cannot be bent without breaking, the refining is finished. The blast is then stopped; the coals covering the surface, as also the cinders, must be raked off the copper, after being allowed to cool a little. The surface is now cooled by sprinkling water upon it, and the thick cake of congealed metal (rondele) is lifted off with tongs, a process called "schleissen" (shaving), or "schelbenreissen" (shaving), which is continued till the last convex cake at the bottom of the furnace, styled the "kingspiece," is withdrawn. These rondelles are immediately immersed in cold water, to prevent the oxidation of the copper, whereupon the metal becomes of a coquille red colour, and gets covered with a thin film of protoxide. Its under surface is studded over with points and hooks, the result of tearing the congealed disc from the liquid metal. Such cakes are called rossette copper. When the metal is very pure and free from protoxide, these cakes may be obtained as thin as the 24th part of an inch. The refining of 2½ cwt. of copper matte, takes three quarters of an hour, and yields 14 cwt. of gahr copper in 36 rosettes, as also some gahr slag. Gahr copper generally contains from 1½ to 2½ per cent of lead, along with a little nickel, silver, iron, and aluminum.

L. Browne (Brighton).—There are, properly speaking, no gold mines in Piedmont. Veins of auriferous pyrites are sometimes met with. The most celebrated are those of Macugnaga, at the foot of Monte Rosa. These produce about 10 to 11 grains in the cantic. They are generally found in gneiss rocks.

"A Painter" (Bond-street).—Red spirit lacquer may thus be prepared:—2 gallons of spirits of wine, 1 lb. of dragon's blood, 3 lbs. of Spanish annatto, 3½ lbs. of gum sandarac, and 2 pints of turpentine.

George Williams (Aldington).—The plan of couring the air through winding galleries was originally contrived about the year 1760, by Mr. James Spedding, of Workington, one of the ablest plenmen of the day.

"J. R." (Ipswich).—Artificial stone, for statuary and other decorations of architecture, has for a long period been used with success at Berlin. The proprietor of the works there is Mr. Feiner.

"G. T. M." (Newgate-street).—A work, entitled "A true Narrative concerning the Woods and from Woods of the Forest of Deane, and how they have been disposed since the year 1635," was published in 1663. In this, information is given of the stock of timber for the navy at the restoration of Charles II.

"J. B." (Callington).—The most remarkable tin mine in Bohemia is that of Schleckenwald, where the ore is deposited in the form of accumulated masses of stock works. One of these masses, shaped like an inverted cone, is of very considerable magnitude, being from 90 to 100 fms. in thickness. It is surrounded by gneiss, and the mass itself is composed of granite, in which are disseminated grains of the ore. This mine has been wrought for more than five centuries, and has been carried to a depth of about a hundred fathoms; but the ore is so disseminated in this rock, that it requires 10,000 quintals to yield from 35 to 40 quintals of tin.

"Iron."—We should feel greatly obliged to our correspondent for such particulars as he may have time to furnish, and which we shall have pleasure in publishing.

"A Constant Subscriber" should visit the Museum of Economic Geology, Craig's court, Charing-cross.

"E. B." (Albany).—Mr. Talbot is one of the most successful operators with the Calotype process. It is thus performed:—A sheet of the best writing paper, of smooth surface, and close even texture, is washed, by means of a soft brush, with a solution of 50 grs. of crystallised nitrate of silver in 1 oz. of distilled water, and then dried, either by holding it at some distance before a fire, or by spontaneous evaporation in a dark room.

When dry, or nearly so, it is immersed for two or three minutes in a solution of iodide of potassium, containing 500 grains of that salt in a pint of water. It is then immersed in water for a quarter of an hour, lightly dried with blotting-paper, and the drying completed by holding it near a fire. All these operations are best performed by candle-light. The paper thus prepared is called iodized paper; it is not sensitive to light, and may be preserved for a long time without change. When required for use, it is to be washed with a liquid prepared by dissolving 100 grains of crystallized nitrate of silver in 2 ounces of distilled water, adding to the solution its own volume of strong acetic acid, and mixing the liquid thus formed with from 1 to 20 volumes of a saturated solution of crystallized muriatic acid in cold distilled water. This solution is to be washed on the side previously iodized, and, after the liquid has been allowed to remain on it for half-an-hour, it must be dried lightly with blotting-paper.

This operation requires the total exclusion of day-light. The paper prepared in this manner is exceedingly sensitive, exposure of less than a second to direct day-light being quite sufficient to produce a decided effect. The calotype paper may be used for taking portraits from the life by means of the camera obscura. When properly prepared, it yields pictures of exquisite beauty and fidelity. The picture is generally latent and invisible, but may be brought up immediately by again washing the paper with a mixture of one part of the silver solution with three parts of the saturated solution of gallic acid.

In cold weather, the development of the picture may be accelerated by holding it over a basin of hot water.

The picture thus obtained is to be fixed by washing in clean water, lightly drying by blotting-paper, and then washing it over with a solution of bromide of potassium, containing 100 grains of that salt in 8 or 10 ounces of water.

After a minute or two, it is to be again well washed in water, and then finally dried.

Where bromide of potassium is not at hand, a strong solution of common salt may be used in its stead.

The pictures produced are negative, but positive copies may be obtained, by placing it with its face against the sensitive side of a piece of photographic paper, pressing it into close contact by a board below and a glass above, and exposing it for a short time to good sunshine.

A more sensitive copying paper may be prepared by soaking letter paper for a minute in a solution of salt and water—one ounce of salt to a gallon of water—drying it, and then washing it over with a mixture, made by adding to a solution of 70 grains of nitrate of silver in an ounce of water sufficient caustic ammonia to nearly redissolve the precipitate at first produced.

The positive pictures are fixed by washing in water, and immersion for 10 minutes in a solution of hypoiodite of soda, one ounce to a pint of water, then finally washing and drying.

"A Lapidary" (Islington).—Calcite, or turquoise, is found in reformed masses, which have a peculiar greenish blue colour, but of various shades, passing on the one hand into sky blue, and on the other into apple green. It is full internally, but occasionally the lattice is waxy, rarely splendent, fracture conchoidal, rough and uneven, frequently scaly. It is commonly opaque, rarely translucent on the edges, streak white. In the reducing flame of the blow-pipe it becomes brown, and colours the flame green, but does not fuse; with borax it melts readily into a limpid glass. The oriental turquoise is found in alluvial clay, in the neighbourhoods of Nishapuri and Feruzkhan, in the Persian Korasan. Malachite, with which turquoise may sometimes be confounded, yields a green streak, while that of calcite is white. The occidental turquoise, found near the town of Sernor, in lower Languedoc, is merely teeth, or bone, coloured with phosphate of iron.

Francis Walker (Southgate).—The price of a chaldron of coals in London, in the year 1830, was to 2½ lbs. 7½ d., which charge was thus apportioned:—Coal owners, for coal, 1½ d.; coal fitter, ship owner, and municipal dues, 1½ d.; Government duty, corporation charges, and London coal merchant, 1½ d. 5½ d. The Government duty of 6s. has been abolished since that period, but the other charges have sustained but a trifling diminution, and are yet susceptible of great reduction.

"L. M." (Cheltenham).—The coining press, or mill, is of French origin, and is generally ascribed to Antoine Bouchier, an engraver, who, in 1533, first tried it in the French king's (Henry II.) palace, for the coining of counters. It remained in use till 1585, in the reign of Henry III., when it was laid aside, on account of its being more expensive than the hammer coinage. It remained in use till 1624, when Broit, a French artist, unable to persuade the French Government to adopt it, came to England. It was not, however, finally brought into use before 1623; previous to that period, the money in circulation was made by forging, or hammering, slips of gold and silver to the proper degree of thickness, then cutting a square from the slip, which was afterwards rounded, and adjusted to the weight of the money to be made; after which the blank pieces of money were placed between two dies, containing the design of the coin, and the upper one was struck with the hammer. The money was necessarily imperfect, from the difficulty of placing the two dies exactly over each other when the blank piece was between them, as well from the improbability of a man being able to strike a blow with such force as to make all parts of the impression equally perfect.

"W. N." (Waterford).—Had better apply to some respectable broker for advice, previous to embarking his money.

"E. M." (Newcastle-on-Tyne).—The first public notice of coals is in the time of Henry the Third, who, in the year 1272, granted a charter to the town of Newcastle, giving the inhabitants a licence to dig coals; and the first statute relating to this article was the 9th Henry V. cap. 10, ordaining all keels in the port of Newcastle to be measured by commissioners before carriage of coals, on pain of forfeiture.

George Jones (Regent-street).—Clean copper, or brass, according to Böttger, in contact with cutting of tin, in a boiling solution of peroxide of tin in potash, becomes covered in a few minutes with a white permanent layer of tin. Bronze may likewise be tinned in this manner. With electro-pure metals, on the contrary, such as iron or zinc, the current of a battery is necessary. On this principle depends the tinning of brass pins, by dipping them in alternate layers with tin plates, and boiling the whole in a solution of cream of tartar.

"\* The numerous disappointments in procuring back Numbers during the past year induces us to suggest, that subscribers should be careful in filing, or otherwise preserving their papers; and where extra copies are required, that they should be supplied as early as possible.

"\* We should feel obliged to all pursers, captains, or adventurers, to forward particular lists of meetings, &c., of the mines with which they may be connected, on the earliest opportunity, that they may be published in the Journal.

\* It is particularly requested that all communications may be addressed—  
To THE EDITOR,  
Mining Journal Office,  
26, FLEET-STREET, LONDON.  
And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL  
Railway and Commercial Gazette.

LONDON, AUGUST 25, 1849.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

For reasons, which will be obvious to our readers, we omit the names of the parties, and the particular mines referred to, but the facts, we believe, are indisputable. A certain gentleman from the west having during his sojourn in London, while attending to the interests (?) of the several mines with which he is concerned, made the acquaintance of a gentleman from the north, induced him to purchase shares to the amount of some 3000. to 4000. in one of the mines—there being no operations going on, as we are informed, nor even a cost-book existing. Its cognomen, or title, however, we admit, was of a seductive and attractive nature. The trick, as described to us, is nothing less than fraud, while we congratulate the honest miner in this attempt not having been successful. The game appears to have been artfully played. A broker was applied to, through whose bankers the money was to be paid, and all was considered right; the parties left town; a communication took place; the draft for payment was stopped; and the next move in the affair, we should naturally expect, will be an action to enforce payment, which we assume, however, will not be attempted, as the parties can never have the unblushing effrontery to bring the matter before the public. We have merely adverted to the present case, to put parties on their guard, that we shall ever expose such acts, and endeavour, so far as lies in our power, to protect legitimate mining, and to deprecate the conduct of those whose only object would appear to be to live on the plunder they can obtain, at the cost, not only of the more wealthy, but to the injury of their more honest and well-disposed fraternity in mining, but not in dishonour.

We last week briefly adverted to the report of Mr. SEYMOUR TREMENHERE, as one of the commissioners appointed under the Act, 5th and 6th VICTORIA, cap. 99, giving the statistics, which are important, as not only affording evidence of the advance made within the past few years, but illustrating our present position. The report itself is of a lengthened nature, and, so far as we can see, embraces many subjects, and treats upon various points, which we consider are not embodied, or form part of the duties of a commissioner, and thus it is that we have expressed our opinion that he has travelled "out of the record." Mr. S. TREMENHERE may be, and doubtless is, a sensible well-informed man, with a well-educated mind; but we repeat we consider he has gone beyond the bounds appertaining to his enquiry, in doing which, however, we do not for a moment entertain a doubt but that good will accrue.

We do not blame the gentleman for bringing into action all his powers, or for submitting to Government his views; but we do object, on principle, to any precedent being established whereby a commissioner appointed for one specific object assumes to himself higher powers than those with which he is vested. It was our intention to have placed before our readers an abstract of the report, which embraces upwards of 1500 lines; but we find our space will not admit it on the present occasion, while the condensation of an article of so great a length, treating on one subject alone, requires some care and attention, so as to render it perfect and, at the same time, comprehensive. We much regret that we cannot agree with the theory advanced by Mr. TREMENHERE, for his report in itself affords the best evidence that it is easy to write but hard to put in practice. Many attempts, we are told, have been made in Northumberland, Durham, Yorkshire, Derbyshire, and other colliery districts; but the results have been attended with failure; a want of co-operation on the part of the coal-owners, and the apathy displayed by the working collier, have deterred those who would willingly have lent their aid in carrying out a measure which has been one of our continual themes—the establishment of a School of Mines; but this must be a Government measure, and Ministers are short-sighted that they do not avail themselves of the examples and advantages afforded by continental states.

Mr. TREMENHERE refers to the Museum of Practical Geology as affording facilities; but this is an absurd notion, and only such as we could suppose would be advanced by a *protégé* of Government. How is it to be supposed that the son of a working collier, or agent of a colliery, in Northumberland, Scotland, Wales, Staffordshire, or Derbyshire, can be sent up to London, at a heavy expense, to mix, as it were, with another world, merely to receive the advantages attendant on the lectures, or the readings, of the professors, or those engaged. The idea is perfectly absurd, whether we consider the cost attendant, or the advantages to be derived. Sir H. DE LA BECHE we know to be a man of the first attainments; but he is no practical underground collier, nor has he had the practice of a "butty" or a "furnace-keeper." We may run through the list; and while we may give every credit to Mr. HUNSTON, as a clever writer and a gentleman of acknowledged application, as well as others connected with the establishment, yet it must be apparent to any one connected with colliery operations, that they are not the proper tutors, or instructors.

It may be said that the knowledge so acquired would be associated with practice, but we contend that such instructions should be in the immediate locality; for, as we have instances weekly, the appliances in one district are not suitable to another. If that the report of Mr. TREMENHERE could be placed in the hands of the operatives, his remarks on Chartists and Unionists, moral evils, physical and moral improvement, and the smooth working of society, might have some effect; but to fill up pages which are scarcely read, except by the Government executive only, or when brought forward through the medium of the press, appears to us to be most uncalled for, and to be, as would be designated in ordinary parlance, "making up." We are treated with opinions on water companies, hospitals, barracks, baths, wash-houses, schools, rural police, public-houses, *cum multis aliis*, all of which are fitting subjects, we admit, for consideration in their proper places.

The report, as we have already observed, is of a general character, and leaves us at a loss to determine what were the duties of the commissioner, or the points to which attention were to be directed. If that it is to be considered but as a "rambling" commission, without any one or more direct objects beyond that of acquiring general information on the various subjects on which the report treats, then we think all such attempts must be failures. We have only to repeat, that if Government wishes a report of this nature to have any beneficial effects in the colliery districts, they should publish it entire, and let it be gratuitously distributed among the operative miners and colliers. This might have some good effect, but the truism conveyed in the shape of a parliamentary report of so general a character, and with comparatively so little practical information in it, we cannot but consider, a waste of public money, and the time and talents of the individuals employed.

We have transcribed, in another column, an extract from the City Article of the *Morning Post*, on the subject of slave-holding mining companies, and in reply to a letter which we inserted in our last Number, from Mr. W. Routh, the secretary of the St. John del Rey Mining Company. We do so on two grounds—first, our desire to support all efforts which have for object the total extinction of slavery; and, secondly, because our able contemporary has mooted a question of stirring interest to the labouring miners of this country. He suggests that slave labour should be altogether abolished by these companies, and an effective force sent out from Cornwall. At this moment, when there are so many unemployed able hands in our mining districts, the subject claims most serious consideration on the part of the directors of the companies implicated in the very discreditable question of slave labour. Our contemporary proposes a suspension of dividends, or a fresh issue of shares, to provide the capital necessary for carrying out the object. This, no doubt, will be a very unsatisfactory proceeding in the opinion of the general body of shareholders, who only regard the result without reflecting on the means; but no matter what the expense may be, it is a step which ought not unnecessarily to be delayed a packet. The mortality is evidently most frightful amongst these wretched beings; and "Verax," who writes in the *Morning Post*, shows clearly that the blacks are not competent in strength to the tasks imposed on them in boring. We, therefore, join our efforts with our contemporary, in recommending instant and satisfactory reform in the system at present pursued by slave-holding mining companies; and be the consequences what they may temporarily, it is a course demanded by all that is equitable and honourable; and that the decrees of these companies may be in accordance with what usually actuates the conduct of British merchants.

Our contemporary is quite silent as to the management at the mines of the St. John del Rey Mining Company. We have several letters from persons in Cornwall, formerly employed at Morro Velho, who write very strongly on the point, and declare that the superintendent, especially, is quite incompetent to the duties devolving on him; and that nothing but the utmost dissatisfaction and discontent exists at Morro Velho. The

great complaint is, that he was too old a gentleman—being nearly 70—to be sent out, and too long accustomed to the mere office routine as a secretary in London, to take the command of a large mining staff in a country where the habits and customs are wholly at variance with what he had been used to for three score years and ten. We know nothing of the gentleman in question, beyond the fact of his having been secretary to the company in London; but if only one tithe of the statements made in reference to his administration be true, it is high time that a committee of inquiry should be appointed to investigate the whole administration of affairs, both at home and abroad.

A short time since we pointed out some of the causes for apprehension as to the safety of the long-absent expedition under Sir John FRANKLIN, to discover a north-west passage into the Pacific; and we suggested the probability that Sir JOHN RICHARDSON, in his overland search for the gallant commander, would press up in a northerly direction, in the hope that he might, in that middle region, find the expedition in the height of the present summer, endeavouring to make its way south-east or south-west in the open parts of one or other of the two oceans. Shortly after our observations were in print, a letter was received in this country from Sir J. RICHARDSON, giving an account of his progress up to the spring of this year, and announcing, what from general reasoning we had supposed he would do, his intention of travelling as nearly as possible direct north, in the hope of finding the expedition by that course, or of learning what had been its fortunes or fate. Within these few days we find, from the American papers, that the *Pandora* and *Herold*, which took the long voyage round the Horn, and traversed all the latitudes of the Pacific, and searched the Polar coasts, have returned to the Sandwich Islands, without at all, or in any sense, having achieved the objects of their perilous labours, or lessened the solicitude which is felt in England for our gallant and suffering seamen, who have had to endure, if indeed they yet survive the severities of them, four winters passed within the polar basin. Whatever for their relief and delivery can be accomplished, we must rest perfectly sure will be done; but it is to be feared that the safety of the expedition have, from some causes, been grievously imperilled.

We have always studiously avoided giving vent to expressions which might lead our readers to infer that our opinions were in accordance with the particular views entertained by any of the numerous parties who, under several phases and various denominations, have at different periods appeared on the political stage. We should, however, be wanting in our duty, as "faithful chroniclers of the times," did we not on this occasion notice a political event which has given great satisfaction to all classes in the United Kingdom, and which we anticipate is likely to be productive of lasting and beneficial results—not only to the suffering sister island, but to the more prosperous dominions which own the mild rule and benign sway of QUEEN VICTORIA—we allude to the recent visit of her MAJESTY to Ireland. In referring to this event, it is not our intention to enter into any disquisition on the comparative merits or demerits of the Ribbon or Orange factions; nor shall we attempt to discuss any of the political questions, or endeavour to solve any of the doubts, which have perplexed the governing powers who have, from time to time, swayed the destinies of the "green isle of the ocean."

These have been so often discussed in all their various bearings by our contemporaries—almost *ad nauseam*—that, even did our limits allow us to digress so far, we should consider it a work of supererogation; we shall, therefore, as briefly as possible, in an humble endeavour to follow the bright example of our gentle mistress, by carefully abstaining from all allusion to sectarian predilections and party prejudices, offer a few remarks on the sources of wealth which at present are lying dormant in Ireland, requiring but capital and industry to develop them—that they could return a remunerative interest on the sum embarked, and, at the same time, by giving employment to the labouring classes, alleviate that distress which has been the fruitful source of so much misery and crime. In our Journal of the 11th inst., we referred to the experiments of Mr. JASPER ROGERS, C.E., "On Peat and Peat Charcoal." We then recommended his invention to the strictest investigation, convinced that, if only one-half the advantages which he calculated would result from it were brought into practical utility, it would be not only the means of enriching those interested in the speculation, but likewise confer an inestimable benefit on the community at large. As early as the year 1846, we directed the attention of our ironmasters to the importance of using peat charcoal as fuel, as we saw in it the probable means of their being able to compete with the foreign manufacturer of charcoal iron. In the United States, Norwegian and Swedish iron realises a price varying from \$90 to \$110 per ton; while English iron rarely exceeds half that sum. In these two countries, English coke iron, finding a heavy duty, is used for inferior purposes—the manufacturers finding it more profitable only to make superior iron to compete with us in foreign markets.

In England it may be questioned whether peat charcoal could be economically manufactured in sufficient abundance to render it of any permanent benefit to the trade, but this objection does not, in any way, apply to Ireland, which, at the same time it is rich in peat in many districts, contains large and abundant deposits of iron ores and ironstone, not the least remarkable of which is the *Sieve Neen* (iron mountain), on the eastern shore of Lough Allen, the ores of which, according to Sir ROBERT KANE, are equal to the blackband ironstone of Glasgow; and, according to the same authority, the ores of the Leinster and Connaught coal-fields are equal, and even in average, superior to those generally employed in Great Britain. In addition to the numerous deposits of iron and the coal-fields, the resources of which have been but partially developed, and the uses of which present are very limited, there exist copper and lead mines, which have given profitable returns for the capital invested in them; and there is no doubt that some of the deposits (on which great discredit has been thrown, from the jobbing of speculators in London, and other parties interested), if fairly and energetically worked, would have shown different results than, unfortunately, has often been the case. We need not refer here to the unfortunate termination of a mining company in the province of Munster, the details of which are, probably, known to many of our readers. Nickel, antimony, chrome, cobalt, manganese, and other minerals, have been found, but as yet have not been the objects of any considerable or continued enterprise; in various parts of the country marble, granite, limestone, and building materials of every description and quality is met with in great abundance. The facility of transport afforded by the noble rivers of Ireland all point out that, with a little art to assist nature, canals might be made to unite the several lakes and their tributary streams, so as to form one great inland chain of navigation. Some observation on the manufacturing and industrial resources of Ireland might be not inopportune here, but as these are not specially within our province, we shall not trespass on the patience of our readers, by offering any remarks on those important branches of industry, but confine our observations to the development of Ireland as a field for mining enterprise.

Looking at the geological formation of the country, the mineral wealth that has already been discovered (not mentioning the gold mines of Wicklow, but the more sterile deposits of the baser metals), and the possibility of still further discoveries being made, if prosecuted with science and energy, we are surprised that British capital has preferred to seek a questionable outlet in distant and foreign speculations, when it might, in all probability, have found a profitable return much nearer home. When we calculate the immense sums that have been wastefully expended in the exploration of foreign mines, and the concomitant disadvantages attending their workings—such as incompetent management, deficiency in the supply of labour, and general inefficiency when obtained, oppressive and vexatious laws, consequent tedious and expensive litigation entailed on the companies by *contravention of those laws, often in ignorance*, and the general want of knowledge of London directors of the localities they are called on to preside over, generally being some thousand miles from their property, and obliged to trust to the honesty of the parties in command on the spot—we wonder that so many individuals should have been found so readily to embark their capital in these distant speculations. On referring to our Share List, it will be found that these observations are formed not from imaginative conclusions, but stern and melancholy facts. The unsettled state of Ireland may have prevented the investment of capital in many industrial pursuits, but, unfortunately, our principal foreign mining enterprises have been conducted in countries where lawlessness, civil war, &c., have run riot—*ex gr. Old and New Spain*. Surely it would have been wiser to embark our capital in a country subject to the same sovereign, and where we ourselves, by our representatives, made the laws that go-

verned us, instead of risking it in a country where our property might be, at any moment, snatched from us by the rapacious grasp of a military dictator, or the vexatious proceedings of legal harp.

In the thaws and sinews the Irish labourer has never been found deficient; all are agreed that he is patient and long-suffering, possessing all the elements to become a good and contented workman. The great drawback hitherto has been the want of industrial knowledge; by coming more into collision with the English this will soon be attained; prejudices will be softened, and national acerbities mutually checked, and ultimately extinguished. The visit of the QUEEN, no doubt, will draw more intensely the public attention to Ireland—already tourists are following in her route—the capabilities of the country will be more fully known to the English man of business—not by exaggerated reports, but by personal observation; and we augur the day is not far distant when, instead of sending money to Ireland as an eleemosynary aid, we shall be transporting it thither to fructify and mutually benefit the sister kingdoms. It must not be in British capital and aid that Ireland alone must trust; her main dependence must be in her own industry. The storm is nearly over, a brighter future is dawning, and it rests with herself to profit by the advantages which British capital and connection offer—bearing constantly in mind the concluding sentence of the Report of the Devon Commission, "that the best directed measures of Parliament will not be sufficient, unless aided by the active and steady exertions of the people of every rank and condition in their respective spheres; but much may be accomplished by the united and vigorous exertions of the Legislature and of individuals."

#### PRODUCE OF LEAD ORE AND LEAD IN THE UNITED KINGDOM,—FOR THE YEAR 1848.

BY ROBERT HUNT, Esq., Keeper of Mining Records.

CORNWALL.			CARDIGANSHIRE—continued.		
Mines.	Lead Ore Returns.	Lead Returns.	Mines.	Lead Ore Returns.	Lead Returns.
Callington	987	632	Nantœos	50	30
Hud Mary Ann	334	260	Llanystud, with small mines	20	10
Huel Trelawny	413	298	Llanymaron	11	5
Huel Trenance	422	279	Llanbadarn	33	18
Hordecombe			Bron-berllan	15	7
Hordofast	731	570			
East Huel Rose	533	319			
North Huel Rose	80	49	4902	3180	
Huel Adams	964	577			
Oxmons	470	288	CARNARVONSHIRE.		
Huel Rose	399	239	Llanrwst	21	14
Obert	68	41	Penrhyn-du	21	14
Holmholm	154	90			
Leman					
Great Calstock Moors			CARMARTHENSHIRE.		
Huel Concord			Nant-y-Mwyn	307	204
Calstock	179	110			
	10,494	6614	DENBIGHSHIRE.		
			Liangollen		
			FLINTSHIRE.		
			Talgarth	1500	980
Tamar	1022	631	Fronfawng	1695	1168
Huel Adams	56	30	Hendre	1040	838
East Tamar Consols	237	173	Longley	15	10
Huel Friendship	9	5	Maes-y-safn	1138	824
Huel Betsey	6	3	Pen-y-rhembas	1160	819
Lydford Consols	4	2	Mold Mines	219	153
	1334	844	Long Rake	39	21
			Milw	117	81
			Penybrynn		
			Dingle & Deep Level	887	643
			Parc's Mine	21	15
			Trelorgan	15	10
			Westminster Mines	659	451
			Halkin Hall	39	26
			Garrig-y-booth	6	4
			Afongoch	106	69
			Bodelwyddan	375	261
			Bryng-wyrog	11	7
			Bwlch-well		
			Jamaica	835	599
			Bwlch-y-ddaunfry	20	16
			Marion		
			Gwern-y-mynydd	18	13
			Mostyn	13	8
			Bagill (ore sold at)	46	20
			Billinga	45	20
			Caerhelyg	14	7
			Mostyn	12	5
			Ciwlwmllta	26	11
				10,056	7069
			MONTGOMERYSHIRE.		
			Llangynog	51	31
			Caerconwy	33	20
			Rhos-wyddol	26	15
			Craig-RhiwARTH	27	16
			Brynddail and Pen-y-clyn	155	100
			Gorn	43	30
			Machynlleth, including	545	360
			Newtonards	616	366
			Conlig	314	179
				930	545
			LIMERICK.		
			Shallice	340	202
			MONAGHAN.		
			Bond and Newry		
			WICKLOW.		
			Glenmalure	45	39
			Luganure	422	295
				467	325
			WATERFORD.		
			Barristown	175	116
				Total for Ireland	1912
					1188
			SCOTLAND.		
			AYRSHIRE.		
			Woodhead	450	320
			Afton Lead Mines	80	56
				530	376
			ARGYLLSHIRE.		
			Stroniton Mines	236	141
			DUMBARTONSHIRE.		
			Dumbarton		
			KIRKCUDBRIGHTSHIRE.		
			Cairnsmore	476	311
			Cairnshairn		
			Black Craig	86	58
				562	369
			LANARKSHIRE.		
			Lead Hills Mine	300	200
			DUMFRIESHLIRE.		
			Wanlock Head	960	660
			Total for Scotland	2588	1736
			ISLE OF MAN.		
			Foxdale Mines, (including Peel's ship)	1566	1034
			ment, &c.		
			Laxey	695	461
			Douglas	260	170
			Mona		
				2521	1665

Table showing the Total Quantity of Lead Ore raised and Lead Smelted in the United Kingdom in 1848:—

ENGLAND.	Lead Ore, Tons	Lead, Tons
Cornwall	10494	6914
Devonshire	133	844
Cumberland	8272	5684
Durham and Northumberland	18815	14658
Westmorland	519	388
Derbyshire	5185	3270
Shropshire	4130	2768
Somersetshire	59	39
Yorkshire	6848	4753
	Total for England	55638
		39142
WALES.	Tons	Tons
Cardiganshire	4902	3180
Carmarthenshire	21	14
Carmarthenshire	307	204
Denbighshire		
Flintshire	10056	7069
Montgomeryshire	997	601
Merionethshire	93	54
	Total for Wales	16305
		11122
IRELAND.	Tons	Tons
	1912	1188
SCOTLAND.	Tons	Tons
	2588	1736
ISLE OF MAN.	Tons	T

## A FEW REMARKABLE FACTS ABOUT ELECTRICITY AND ELECTRIC TELEGRAPHS.—No. II.

BY GEORGE LITTLE.

(OF THE FIRM OF BRETT AND LITTLE, ELECTRO-TELEGRAPHIC ENGINEERS, LONDON.)

*"Suum Cuique."*

Before proceeding farther with a subject so interesting as that relating to electricity and electric telegraphs, I wish it to be understood that my only object in bringing before you these few matters of fact is simply, in the first place, to direct your attention to the various inventions of those men whose inventive minds have, at different periods, been directed to the improvement of the electric telegraph—not that we are to be bound to their imperfect means of transmitting intelligence, but because there is a certain amount of merit due to those whose mental and physical exertions were the means of first introducing to public notice a discovery for the national benefit. I shall then lay before you in as clear a manner as possible consistent with brevity, the mechanical arrangements of all the various electric telegraphs—some very complicated—others not so; and, finally, to show in what way the great desideratum for an electric telegraph has been happily arrived at. With all telegraphs wherein electricity is employed, it is necessary to have some kind of an auxiliary agent—some sort of audible signal, whereby the attention of the recipient, at a distant station, can be called to his post, so as to obviate the necessity of constant watching. Mr. Ronalds, for this purpose, employed an electrical pistol with his uniformity of time telegraphs, which pistol had, of course, to be charged with an explosive compound, and which would only answer the purpose of calling attention once; it had, therefore, to be recharged every time.

Before anything really useful could be done with electric telegraphs, we had to wait for Prof. C. Ersted's discovery of the magnetic properties of electric currents—the first discovery of which was communicated by himself in Thompson's *Annals of Philosophy*, vol. 16, p. 273, October, 1820; the substance of which is as follows:—The two poles of a powerful voltaic battery were connected by a metallic wire, so as to complete the galvanic circuit; then taking a magnetic needle, properly balanced on a pivot, as in the mariner's compass, allowing it to assume its natural position in the magnetic meridian, he then placed the wire of the battery through which the electric current was flowing above the needle, so as to be parallel, at the same time horizontal to it, but not touching. The instant this was done, the needle, from the influence of the electric current, changed its position. From this simple experiment sprung the well-known galvanometer, which has of late years been taken advantage of by many persons in the construction of electric telegraphs. On the 25th of September, 1820, M. Arago communicated to the French Institute the discovery that the electrical current possesses in a very high degree the power of developing magnetism in iron or steel. This philosopher was the first to form an electro-magnet, by passing a current of electricity through coils of wire, wound upon bars of iron. The electro-magnet is the basis upon which the whole invention rests in the construction, with one or two exceptions, of all printing telegraphs and telegraphic alarms. In the same year, Ampere, a philosopher engaged upon the subjects relating to telegraphs, predicted the possibility of making the deflections of the magnetic needle answer the purpose of transmitting telegraphic intelligence. In page 19 of his Memoir, he resolves the problem in the following manner:—As many magnetic needles as there are letters of the alphabet, which may be put in action by conductors, which may be made to communicate successively with the battery by means of keys, which may be pressed down at pleasure, might give place to telegraphic correspondence, and would be as prompt as writing speech to transmit thought.

Instruments on that plan were constructed 17 years afterwards by Davy of London, and Alexander of Edinburgh. At first there were some doubts as to the instantaneous transmission of the electric current, whether or no there would be any sensible diminution in an electric current when passed to a great distance, which would render the instruments practically useless when placed great distances apart. Mr. Barlow, some years since, stated that from some experiments of his, he had fully ascertained that there was so sensible a diminution when passed through only 200 feet of wire, as to convince him at once of the impracticability of such a scheme. No doubt there is a diminution of the current when passed through long conductors, but so trifling, as in no way to interfere with the synchronous working of the instruments. Most of my experiments were tried by passing the electric fluid through 1000 miles of wire, and I could never detect the slightest difference of time between the instruments, at least not with the eye.

It will now be necessary to explain to those who are not acquainted with the construction of a galvanometer, the way this simple, at the same time useful, instrument is arranged, the invention of which is based upon C. Ersted's discovery of the magnetic property of electric currents, and which seems to have been taken by many of the inventors of electric telegraphs, as the basis of their instruments. The first galvanometer was constructed by Prof. Schweiggner, of Halle, and is constructed as follows:—Upon an oblong reel of wood, or brass (if brass, it requires to be varnished, so as to prevent, by any possibility, the wire from coming into metallic contact, as that would have a tendency to neutralise the effect of the instrument) is coiled a quantity of copper wire, 30 yards or 40 yards, which has previously been insulated, by coating it with a non-conducting material, such as cotton or silk, a space being left in the centre transverse to the coils of wire, so as to admit an axis, upon which is secured two magnetic needles, one of which moves freely inside the coil or reel, the other outside; both needles are fixed firmly on the axis, and so arranged that they swing in hollow centre screws—that is, if the coil be secured in vertical position; the lower end of the outside needle has a north polarity, the upper a south pole. With the inner needle it is the reverse, the object of so disposing of the poles being to neutralise the influence of the earth's magnetism. For some experiments, instead of placing the coil in a vertical position, it may be placed horizontally, and the needles suspended by a thread of silk, so that one hangs loosely within the coil, and the other without.

On bringing the ends of the coiled wire in contact with a galvanic battery, a current will immediately flow through the coils around the reel, which will have the effect of causing the needles to move at right angles, or nearly so, with the coils of wire; by reversing the wires in connexion with the battery, the motion of the needles will also be reversed.

In a report of the Academy of Industry of Paris, Feb., 1839, is a description of an instrument constructed on the above principles in 1832, by M. Le Baron de Schilling, which consisted of 36 magnetic needles, each of which was placed vertically in the centre of a coil of wire. We are told that M. de Schilling was the first to adopt with this kind of apparatus an auxiliary agent, or alarm, to call attention, which consisted of a ball of lead, so arranged that the first motion of the needles would cause it to fall; it is stated that he used 72 conducting wires for his instrument. In the *Polytechnic Central Journal*, Paris, 1838, No. 31 and 32, is an account of a telegraph invented by Counsellor Gauss and Prof. William Weber, of Göttingen, in 1833, which instrument depended upon the deflection of a magnetic bar, weighing 30 lbs. The coil of wire being composed of 30,000 ft. of wire, their mode of passing signals with this single magnetic bar was by the number of motions made, as follows:—Five to the right would signify the letter, A—four to the right, and one to the left, would mean B; three right, one left, and one right, would denote C, and so on throughout the whole alphabet—it being, in fact, a sort of cross counting, which would tend greatly to confuse, at times, the recipient at the distant station. This telegraph was tried at a distance of one mile and a quarter in Göttingen.

In 1837, we hear of the following persons endeavouring to improve on the above—viz.: Prof. Wheatstone and Davy, in London; Professor Stenheil, of Munich; Prof. Masson, at Caen; and Alexander, of Edinburgh. Prof. Wheatstone employed in his instrument five galvanometers, placed in a vertical position upon a frame, and so arranged that the outside needles projected beyond the dial-plate of the apparatus, and always exposed to view. The dial was of a lozenge form, and had marked, at proper distances, 20 letters of the alphabet, and one series of the units. The letters were arranged in the following order:—

The strokes at figs. 1, 2, 3, 4, and 5, represent the outside needles. In passing signals, two of the needles were made to move together, so that by their joint deflection and convergence towards the letter intended to be designated, words could be formed; for instance, the needles at figs. 1 and 5 being made to move their upper points towards each other, the letter, A, would be designated; for D, the needles 2 and 5 were made to move towards each other, and so on through the alphabet, or as many letters as were on the dial. By a peculiar arrangement of the coils of wire, and a set of keys, or studs, so as to complete the connection with a battery, and any two needles at pleasure, six conducting wires were sufficient for the purpose. This telegraph was tried at a distance of about 18 miles between Paddington and Slough.

In connection was an ingenious contrivance of the professor's, for calling attention to the instrument when about to be worked, which consisted of an arrangement of wheel or clock work, so arranged that on the wheels being set free to revolve, a hammer was made to strike against a bell; the means of setting free the clock work being very similar to that adopted by Morse, in 1832, which will hereafter be described, and for which purpose advantage was taken of the discovery by M. Arago, that the electric current would convert a piece of iron into a temporary magnet on being made to pass through coils of wire

wound upon it. The soft iron was so placed that another small piece, which kept the clock work at rest, would, on the passage of the electric current, be attracted towards it, thereby setting free the clock work to revolve, which in its turn caused a hammer to strike against a bell. There was great ingenuity displayed in the construction; but, from their complicated nature, they were never brought into general use. One or two errors in the apparatus was as follows:—The wire used on the galvanometers was of such a size as to allow the galvanic current to pass silently by, without exerting its influence on the needles, unless very powerful battery was employed; then, again, the many points of contact such an instrument must necessarily have, tended very much to the forming of imperfect circuits.

With regard to the use of electro-magnets, there are many objections. I have during my experiments upon this subject been greatly annoyed at times through the keeper of the magnet adhering to it for some time after the current of electricity had been cut off, the induced magnetism, from some cause, being still retained in the iron to an extraordinary degree. This, as is often the case, still happens on our lines of railway, where electro-magnets are in any way used. The keeper being retained by the magnet after the circuit is broken, leaving the clock work of the alarms to its full play, ends very often in the destruction of the machinery. Another evil attendant on the use of electro-magnets for this purpose is, that at times, do what you will, by putting on all the battery power possible, you cannot induce magnetism. In the iron this happens frequently after the magnet has been used many times during the day with little intermission. When employed upon the old telegraphs I have been troubled very much this way. Sometimes a flow of electricity, in its downward course to the earth, will envelop the iron, and cause such a derangement, as to render it absolutely necessary to be entirely renewed—in fact, all telegraphs wherein electro-magnets are employed in any way are subject, more or less, to these annoying defects.

[To be continued in next week's *Mining Journal*.]

## Original Correspondence.

## IMPROVEMENTS IN SMELTING COPPER.

SIR.—I trust "Germanicus" will respond to the polite request of Mr. Prideaux, conveyed in your last Number. I am sure all who have read the correspondence of "Germanicus" will admit that gentleman's extensive and accurate knowledge of the subject in question; but for myself, even if I were qualified, and however conscientious my remarks upon other persons' improvements might be, still I should feel that an obvious reason precludes me criticising their improvements.

I may mention, however, that about three years ago, when I had no more interest in this subject than Mr. Prideaux, I endeavoured, by a letter published in a West of England paper, to show that the smelting of copper ores "must now undergo a vast change." The correctness of the anticipation seems but too well verified by the statistical results of the trade; but were it not for a still greater change now on the eve of accomplishment, I would probably not now refer to this matter. It appears, for instance, that the quantity of copper ore sold by public ticketing in Cornwall, in the year ending the 31st of December, 1845, was 162,587 tons (21 cwt.), the value of which was 919,938L 6s.; whereas, in the year ending the 30th of June last, the quantity had diminished to 144,983 tons (21 cwt.), the value of which was only 716,917L. And if we take the public sales of July and August, 1848, and compare them with the quantity announced for sale in the months of July and August of this year, we shall find the decrease is still going on; for, in the former period, 27,266 tons (21 cwt.) were sold, while the quantity announced for sale in the same two months of this year is only 24,368 tons (21 cwt.), being a diminution in quantity of 10.5 per cent. Now, in 1845, the exports of copper ore, the produce of South Australia, were only 981 tons 17 cwt., valued at 17,179L 5s. 6d.; while the exports last year (1848) had increased to 16,323 tons copper ore, valued at 310,172L. Although the duty is now but 21 cwt. per ton of copper ore, instead of 11. 1s. per ton of metal on colonial ore—a difference of about 4s. 3d. per ton of ore—this reduction is much more than counterbalanced by the reduction of duty upon colonial copper, which was 4L 4s. per ton; consequently the late reduction of the duties now makes it more favourable for the colonist to smelt his ores on the spot by 3L 5s. 6d. per ton of copper, besides, which he will, at the very least, effect in saving in freight, by shipping copper instead of ore, of 10L 10s.—thus making a total saving, irrespective of the advantages or disadvantages for smelting of his locality of 13L 5s. 6d. per ton of copper. We cannot, therefore, be very much surprised if this valuable metal should be sold (ere many years) at the low price of 50L per ton, and despite the accumulating quantities, and, therefore, the probable decreasing value of the precious metals. Indeed, little doubt can be entertained that copper, like the other common metals, must fall greatly in value. We know, in a great mart for cast-iron, this metal was thought in 1832 at a ruinously low price at 4L 15s. per ton; in the very same place the manufacturer would just now be only too thankful to get one-half the price, which is chiefly in consequence of improvements in the manufacture of that metal. But it would appear, from two circumstances—one being the disastrous effects of over-speculations in railways, the other the peculiar constitution of this trade—that this country is now unfortunately destined to follow in the wake of the copper smelters of the United States and South Australia, which is much to be regretted, for all in this country ought (except a few) most heartily to desire improvements should be first worked here on an extensive scale, whether those improvements be in or any other use.

August 23.

WILLIAM BIRKMYRE.

## EXPLOSIONS IN COLLIERIES.

SIR.—It is gratifying to find that a well-intentioned suggestion of mine, upon this important subject has, at length been responded to in a proper spirit; and my thanks are especially due to yourself for your co-operation in endeavouring to promote the welfare of the working miner and his family; also to Mr. Richardson, for the dispassionate and honorable way in which he has treated the subject matter, and fearlessly pointed out the too general disposition of those engaged in mining pursuits to contemn and disregard all suggested plans for improving the ventilation of mines, which may happen to be originated by parties unconnected with collieries. Your other correspondent upon this subject last week confirms this to be the fact, when he observes, "If Mr. Colwell imagines that the *sagacious* miners of the *North* are to be theorised without a practical test, he will find himself mistaken." &c. Surely this gentleman cannot have read my letters alluded to with any degree of attention, or he would have discovered that my scheme was deferentially submitted for the consideration of persons more competent than myself to approve or condemn; but I had also expressed my anxious desire that my project should be put to the test, &c. Still it cannot be tested in "the Borough-road." In fact, his letter, as a whole, is contradictory of itself, and affords another brilliant example of the insurmountable difficulties persons like myself have to contend with, in order to obtain justice and protection to the working miner. I again most fervently entreat the proprietors generally (and I should hope, in the cause of humanity, one will be found charitable and liberal enough) to construct one of the foul air cells I have suggested, divided midway, so as to prevent the current of air from passing through it; and if the gases I have named are not found to deposit themselves therein (and I will wager your *sagacious* correspondent alluded to any amount he pleases that they do), I will, without hesitation, acknowledge my error. Its cost would be trifling, and its dimensions according to the discretion and judgment of the scientific viewer, whose sagacity will surely be sufficient to determine its measurement, &c., for this temporary purpose; but I would suggest, in addition to my former description, that the upper part, for the reception of carburetted hydrogen, and all light bodies, should be carried up as high as practicable above the level of the roof of present driftway.

There is evidently a misconception of my impressions, my suggestions, and motives; but I cannot trespass upon your columns by recapitulating what has already appeared therein; I, therefore, solicit an attentive perusal of my arguments. I am fully aware that the gases and the air are blended together, and that they do not perfectly subside into layers according with the specific gravity of each; still I know their natural tendency to be as I have described, and that in some mines the carbon can be caught by holding a jug near the "thill," and all admit that the hydrogen preponderates nearest the roof; it, therefore, appears to me reasonable to expect that a great proportion of these fatal gases would detach themselves from the atmospheric air, and become drifted into these cells. If so (and at present to leave the question of their removal), it seems to me equally consistent to imagine that the subsequent course the air has to take towards its exit it would be less charged with impurity; and if it requires 14 cubic feet of air to one of carburetted hydrogen to dilute it below explosive point, I consider every foot of this gas, stopped in its course, equal to an increase at the down shaft of 14 feet of air. In speaking of the dangers of extreme lengths of air course, I have contended, and still do contend, that the air, by gathering impurities, as it does every yard in its transit, must be most foul towards its exit; hence the necessity of cleansing it, if

possible, at intervals of space. *In this it is*, that my project differs from all others, and which I still hold in opposition to the present practice of blowing the various gases from end to end of the whole air-course.

It is in evidence, beyond dispute, that in some mines the gas may be heard issuing from almost every pore with a singing noise; I think, therefore, there can be no doubt that, in the absence of any other means of vent, it must be propelled by the passing current of air from the first or the second, thence to the third, and so on, mingling with the previously accumulated gas in each driftway, and, consequently, the air nearest the upcast shaft must be far less pure than in other parts of the mine; and hence an excess of these destructive elements over the estimated quantity of atmospheric air required to dilute them, and consequent explosion, attended with the wholesale slaughter of our fellow-creatures.

Another source of danger is, doubtless, from the accumulation of hydrogen in undulations of the roof, or "swillyes;" but we are frequently told that it can be easily removed from such places when known to accumulate in them; and we find that the poor fellows exposed to its malignant influence, and whose very existence is at stake by its presence beyond a certain extent, frequently beat it out with their jackets from such reservoirs, as a temporary means of protection to themselves; but the distance it has to travel to the upcast shaft, in most cases, is so excessive, that it may deposit itself again in a similar place before it can escape; and a less wary fellow-miner, perhaps innocently, cause the destruction of all; then, why should it not become lodged in a place purposely formed for it, as I propose, particularly as these foul air cells are recommended to be constructed at the end of a drift at the very turn of the current, facing the drift, and additionally attracted by the suction of an air-pump.

There may have been many "funny theories" bronched for the accomplishment of so desirable an object as the saving of human life; and these "funny theories" may have produced "many an involuntary smile on the part of some practical men," as it is said, notwithstanding the seriousness of the subject; but, in the course of their experience, the evil so justly complained of, and so laudably sought to be overcome by these "funny theorists," must also have produced a great amount of misery, desolation, and death, to which they have been eye-witnesses; therefore, these "funny theorists" in the cause of suffering humanity, must persevere in reminding these scientific men that, in these *funny times*, their old forms and practices must be departed from, if a decided improvement can be established—if the life of an individual *only* were jeopardised by their continuance, instead of thousands of valuable lives, which are now exposed to destruction by their carelessness, and many almost daily sacrificed through their obstinate prejudice, or absolute neglect. God forbid that this should apply to all on whose management depends the safety of the working men and boys of tender years. I know it does not; they are cared for by many.

In Wall's-End Pit, for instance, no expense has been spared, nor lack of care evinced; they have excellent printed rules for the employed, and which are strictly enforced. The men are visited at uncertain times, and their lamps examined, to see that they have not been disturbed, or trifled with; but whether from jealousy, envy, or self conceit, I know not, and care even less, I feel myself justified, by the spiteful and unmanly opposition of a few to all suggestions tending to improvement, in fearlessly asserting my belief that the many awful catastrophes which so frequently occur have not yet had the effect of moving their obdurate hearts, even to pity the miserable surviving relatives of those good and true men whose bodies have been made the spectacle of horror, as well as sacrifice, in their service, otherwise they would receive a well intended and disinterested suggestion with a better grace.

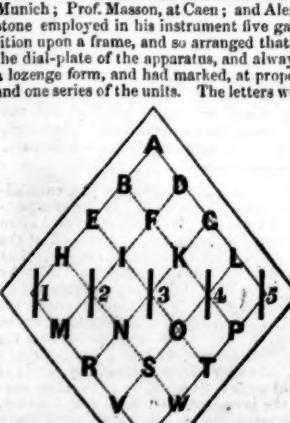
It is, indeed, time that the Government should throw aside all reservation, and ascertain, beyond dispute, the best mode of ventilation, enforce its adoption, and appoint competent inspectors to see such measures carried out; and I venture to premise that the heartstrings of the public would not be so strained as they now are by the frequent horrifying accounts of these dreadful calamities. Who but such men can read *unmoved* the testimony of many of the survivors of such visitations, supplicating improvement in cases which still exist, such as *one shaft only* to supply and evacuate an air-course of 50 or 60 miles, and this shaft divided, perhaps, into three parts—one for the ingress of air, another for its egress, and the remaining portion for pumping out water? It is monstrous to suppose that in such cases all is done that could be to guard against destruction of human life. I would warn the inhabitants of mining districts to bear this in mind, if summoned on a jury upon such an event, particularly where the managers seem predisposed to adhere to their present mistaken mode of ventilation, and perseveringly oppose all new schemes. Sceptical they may be, but nothing can justify a total disregard of that feeling, which is in itself humane and charitable, or warrant them in responding to it with insult. Disgusted as I am with the wilful imputation cast upon me by the individual designating himself "A Viewer," in your last Number, insinuating that I am actuated by motives which are not purely philanthropic, if my suggestions are really not understood, I again plead my want of ability, rather than intention, to illustrate them; and, therefore, for the further information of those who might be desirous to avail themselves of my humble efforts (and I am assured he is not), I will most cheerfully endeavour still further to simplify them gratuitously to any well disposed person, on application by letter. But permit me, in the first instance, in order to show the animus and wilful misrepresentation of this individual, who is at present nameless to the public, to convict him by quoting a few words from my letter in your Journal of the 14th July—viz.: "These foul air cells to be connected with *one main*, to be fixed in the side of the centre roley-way, in order to guard against damage by the falling in of the roof, or rising of the hill—the branch pipes to the foul air-cells to be fitted with stop-cocks, similar to gas-fittings, so that *few or many* of them could be acted upon at the same time," &c.

Now, how has this been understood by one who boasts of his sagacity? Take his own words for it; he says—"Mr. Colwell leaves us entirely in the dark as to the size of his pipes, their cost, by what means he will defend them from the constant falls in the roof, how the cocks are to be regulated," &c. It is obviously clear that his letter was not penned with a desire to benefit mankind; but, on the contrary, with a view to disgust me, like many more, into silence, and deter others from presuming to dictate to such learned men. But it will have a different effect upon me; and if your space, for which I am already deeply indebted, and gratefully acknowledge, will not permit me to unmask such persons, I must, on public grounds, resort to other means of exposure; and I may yet convert them out of their own mouths by publishing an analysis of the evidence in the official reports, particularly if they would attach their names to their writings. I have a little leisure, and I think it could not be devoted to a better cause.—C. COLWELL: *Borough-road, Southwark, August 22.*

## VENTILATION OF MINES—SAFETY-LAMPS.

SIR.—In the letter which you did me the favour of inserting in the *Mining Journal* of the 4th inst., I did not think it necessary to explain my reasons for using a few grains of gunpowder as a substitute for an explosive mixture of fire-damp when experimenting with the Davy lamp, and the modification of it, devised by Dr. Clanny. I may, however, now state, for the information of some of your readers, that as the physical effects of an explosion are, *ceteris paribus*, always the same, whatever may be the explosive material employed; and as the ignition of a small quantity of gunpowder, or gun-cotton, constitutes a much more convenient and safer mode of producing an explosion within the wire gauze cylinder than the introduction of an explosive gaseous mixture, I felt fully justified in using either of those agents in a preliminary experiment, such as that alluded to; and since the slight explosion thus produced sufficed to force the flame through the apertures in the wire gauze, there can be no doubt that the ignition within the cylinder of a sufficient quantity of explosive gas will also occasion the same effect. The only question, therefore, connected with this part of the subject which remains for examination is the possibility of an adequate volume of explosive gas existing within the cylinder, at a moment when the upper part of the lamp contains a mass of flame. This question I have not yet been able satisfactorily to determine, in consequence of other engagements having demanded my attention. I find, however, that notwithstanding the innumerable experiments to which reference has been made, the actual amount of mechanical force generated by the ignition of a given quantity of the explosive gas met with in coal mines has not been ascertained, otherwise the solution of this question could be effected by a simple process of calculation. There are some other points connected with the properties and laws of explosive mixtures of gases, which are very imperfectly understood, and the investigation of which could not, I think, fail to be productive of beneficial results to the mining industry of this country.

With respect to particular safety-lamps, the suggestion of Mr. Lake is well worthy attention, as the adoption of a second envelope of wire gauze in the manner proposed by him must render the mass of flame often exist-



In connection was an ingenious contrivance of the professor's, for calling attention to the instrument when about to be worked, which consisted of an arrangement of wheel or clock work, so arranged that on the wheels being set free to revolve, a hammer



STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular  
MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS  
to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY  
BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE POETS  
by their steamers—starting from Southampton on the 29th of every month; and from  
Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th  
of the month, to Malta, thence to Alexandria by Her Majesty's steamers, and from Suez  
by the Honourable East India Company's steamers.

MEDITERRANEAN.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th  
17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo,  
apply at the company's offices, No. 122, Leadenhall-street, London; and 57, High-street,  
Southampton.

EMIGRATION.—VAN DIEMEN'S LAND AGRICULTURAL COMPANY.

(Established by Act of Parliament and by Royal Charter.)

OFFICE—No. 6, GREAT WINCHESTER-STREET, LONDON.

GOVERNOR—JOHN CATTLEY, Esq.

DEPUTY-GOVERNOR—EDWARD MARSHALL, Esq.

DIRECTORS.

Henry Alexander, Esq.  
Thomas Alexander, Esq.  
Capel Cure, Esq.  
J. G. Cattley, Esq.  
Stephen W. Cattley, Esq.  
Brice Pearce, Esq.  
Francis Wilson, Esq.

Charles Pearce, Esq.  
Thomas Holme, Esq.  
Robert Holme, Esq.  
Valentine Knight, Esq.  
Harry Mackenzie, Esq.  
John Pearce, Esq.

The title deeds of the company having recently been confirmed by Act of Parliament,  
they are now enabled to OFFER FOR SALE THE FEE SIMPLE of every portion of  
the colony, consisting of FOUR HUNDRED THOUSAND ACRES, in various parts of the  
colony; but more particularly invite the attention of emigrants to the eligible districts  
of Circular Head and Emu Bay.

The company's district at Circular Head contains 20,000 acres, of which 4000 acres lie  
in the Peninsula, and the residue on the adjoining main land. The climate much re-  
sembles that of Devonshire, being remarkably pleasant and salubrious, free from drought  
in summer, and frost in winter—thus enabling the farmer to carry on his operations  
throughout the year; and the soil on the main land, though for the most part heavily  
timbered, is some of the richest in the island, being of a deep black vegetable mould,  
very friable, easily worked, and producing luxuriant crops of potatoes, wheat, and every  
description of European grain, fruits, and vegetables, as shown by the result of a thriving  
agricultural population, who have already cleared and cultivated upwards of 3000 acres there.  
The company's township of Stanley now boast a stone-built church, holding 600  
persons, schools for boys and girls, with residences for masters and mistresses, a medical  
practitioner, a stipendiary magistrate, police court, a mill, more than sufficient for all the  
inhabitants, with all the appliances of a highly civilised community, and the harbour  
will accommodate vessels of 300 tons burthen. Those who are confined as to means can  
defer the clearing their lands until they have saved some money, which they can soon do,  
labour being in great demand and food cheap. Timber for sawing and splitting abounds  
—frost and snow are unknown, and the soil is a rich deep loam, peculiarly favourable  
for agricultural purposes. The population on the company's lands, according to the  
census of 1848, was 900, possessing 250 cattle, 700 swine, and 35 horses; they raised produ-  
ce in 1847 to the amount of £15,000.

There are no convicts employed, nor any stationed within 150 miles of these settle-  
ments. The company possess all descriptions of live stock, such as sheep, cattle, horses,  
swine, and deer, of the purest breed, sent out from England at great expense, and large  
sums of money have been expended by the company upon their several locations on roads,  
bridges, farm-buildings, and granaries.

Possessing, as the company's lands do, the various advantages of fertile soil, and a fine  
climate, with frequent and ready access by water to the neighbouring markets, an abun-  
dance of live stock, seeds, farm implements, and stores for sale, and a large agricultural  
population already located, it must be evident that the newly-arrived and inexperienced  
emigrant can at once commence operations, without loss of time or unprofitable outlay  
of capital; they, therefore, offer for sale, 80 acre sections of freehold land on the follow-  
ing terms.—Price £2 per acre. Each purchaser at Emu Bay to have the privilege of  
purchasing a quarter of an acre allotment in the township of Burnie. A purchaser may  
have a free passage, or receive 20/- to provide himself with one, with further assistance  
to families. Half the purchase-money may remain on interest at 5 per cent. for 7 years.

The company reserves to itself the right to fords, ferries, and the formation of bridges,  
and dams across rivers and streams, as well as to the use of indigenous timber, and ma-  
terials for works of general benefit. It retains also the right of laying out and con-  
structing roads through all the alienated lands—ensuring, however, compensation for damage  
to parties by their formation, and of making the Colonial Fencing Act applicable to ad-  
joining tenants. By order, GEO. H. HOWELL, Secretary.

### Recipes.

[Continued from the Mining Journal of August 4.]

COLOURED FIRES—BLUE FIRE.—5 parts nitre, 2 parts sulphur, 1 part metallic anti-  
mony.—Mix.

CARBON FIRE.—4½ parts chlorate of potash, 67½ parts nitrate of strontia, 5½ parts  
charcoal, 22½ parts sulphur.—Mix.

GREEN FIRE.—62½ parts nitrate of baryta, 10½ parts sulphur, 23½ parts chlorate of  
potash, 11 parts charcoal, 1½ parts sulphur of arsenic.—Mix.

LILAC FIRE.—49 parts chlorate of potash, 25 parts sulphur, 20 parts dry chalk, 6 parts  
black oxide of copper.—Mix.

PURPLE FIRE.—42 parts chlorate of potash, 42 parts nitre, 22½ parts sulphur, 10 parts  
black oxide of copper, 22 parts sulphure of mercury.—Mix.

WHITE FIRE.—16½ parts nitre, 23 parts sulphur, 12½ parts gunpowder, 18 parts zinc  
powder.—Mix.

YELLOW FIRE.—74 parts dried nitrate of soda, 19½ parts sulphur, 6 parts charcoal.—Mix.

Some of these compositions are liable to undergo spontaneous combustion when kept  
for some time, even when enclosed in bottles. Serious accidents have arisen from this  
cause.

RED FIRE.—72 parts dried nitrate of strontia, 20 parts sulphur, 6 parts gunpowder,  
2 parts coal-dust.—Mix.—Patent Journal.

### New Patents.

#### SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

Specification of patent granted to Charles Frederick Whitworth, gentleman, of Hull,  
for improvements in preventing accidents on railways. These improvements have, firstly,  
for their object, the rendering of the steam whistle and the steam throttle-valve of locomotive  
engines, partially self-acting and independent in some measure of the engine-driver.  
The patentee effects this, by inclined levers placed on the side of the line of railway,  
which, in case of danger, can be placed in such a position that the levers may  
act upon a trigger and rod, which are attached to the locomotive, and in connection with  
the whistle and throttle-valve; so that one or other, or both of these may be brought into  
play, and thereby give alarm, or stop the train. The patentee states that these objects  
have been partially accomplished before, as he has appended no claim to his specification,  
he has left the public entirely in the dark as to what the *quantum* of "improvements"  
is which he has contributed. Another contrivance embodied in the specification  
consists in fitting a rack and pinion to the bottom of railway carriages, so that, by  
their help, the carriages may be hooked together, with less risk of injury to those whose  
duty it is to attend to this duty. But here, too, the patentee has omitted to make any  
"claim."

#### LIST OF PATENTS GRANTED DURING THE PAST WEEK.

C. Cowper, Southampton-buildings, Middlesex, for improvements in machinery for  
raising and lowering weights and persons in mines, and in the arrangement and con-  
struction of steam-engines employed to put in motion such machinery, parts of which  
improvements are applicable to steam-engines generally. (Being a communication.)

F. Chamber, Warwick-street, Middlesex, commander in the Royal Navy, for improve-  
ments in the manufacture of ships' blocks. (Being a communication.)

A. V. Newton, Chancery-lane, mechanical draughtsman, for improvements in manu-  
facturing and refining sugar. (Being a communication.)

W. E. Newton, Chancery-lane, civil engineer, for certain improvements in steam-  
boilers. (Being a communication.)

#### DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

H. McEvoy, Birmingham, parts of collars.

C. Carney, County Kildare, thrashing machine.

Maplebeck and Lowe, Birmingham, fire-grate.

W. N. Martin, Newman-street, flower-pot case.

F. Taylor, Romsey, Hampshire, nipple protector.

J. Warner and Sons, Crescent, Jewin-street, solar lamp.

J. Clarke and R. Sidebotham, Willenhall, design for stamping machinery.

G. E. White, and W. White, Hartley-row, Hants, ventilating brick.

S. Carlton, 14, Priory-street, Darlington, carriage spring.

J. Cordingly, Ipswich, bathing boat.

G. Babb, Strand, the D'Oyley coat sleeve.—Mechanics' Magazine.

#### CORNISH STEAM-ENGINES.

The number of pumping-engines reported for the month of July is 28—the quantity  
of coals consumed being 1857 tons lifting, in the aggregate, 18,000,000 tons of water 10  
fathoms high—the average duty of the whole is, therefore, 54,000,000 lbs. lifted 1 foot high  
by the consumption of a bushel of coal.—The following have exceeded the average:—

Mines.	Engines.	Length of stroke	Load in pounds.	Load per inch sq. in.	Con- sump. of coal in bus.	Millions lifted per min.	Lifted 1 ft. by 1 cwt. of coal.
Great Work..	Leeds's 60-in.	9 ft	41,820	11.5 9.4	1536	55.8	66
West. Tress..	46-in.	9 ft	27,926	19.7 9.4	1488	54.5	65
East. W. Croft.	Frederick's 80	10' 33	82,333	12.2 5.2	2218	59.3	70
East. Pool..	60-in.	9.75	38,134	11.0 4.1	912	55.8	66
Carn. Bore..	Sims's 50,000-in.	9 ft	60,842	24.2 4.1	1232	57.4	68
Poldice..	Sims's 45-in.	10 ft	54,120	10.3 7.3	2648	60.0	72
United. Mines	Taylor's 65-in.	11 ft	97,621	15.6 5.9	2876	79.0	94
Ditto..	Cardozo's 60-in.	9 ft	100,682	12.8 6.2	3342	58.0	69
Ditto..	Eldon's 30-in.	9 ft	13,631	16.0 7.5	405	64.8	77
Ditto..	Loam's 55-in.	10 ft	87,947	11.6 6.6	2044	55.9	66
Ditto..	Hocking's 65-in.	10 ft	97,817	14.4 6.4	3492	59.3	71
Tywardwayne..	Gardiner's 60-in.	12 ft	73,859	11.7 7.1	2992	57.8	69
East. Wh. Rose..	Penrose, 70-inch	10 ft	68,640	16.0 2.8	1394	70.2	84
Ditto..	Michell's 70-in.	10 ft	65,171	15.9 3.3	1274	64.4	79

LOANS ON DEBENTURES.—The CALEDONIAN RAIL-  
WAY COMPANY are prepared to RECEIVE TENDERS OF LOANS, in sum-  
not less than £500.—Applications to be made or addressed to this office.  
125, George-street, Edinburgh, May 30, 1849.

D. RANKINE, Treasurer.

CLERICAL, MEDICAL, AND GENERAL LIFE  
ASSURANCE SOCIETY.

Notice is hereby given, that the usual DIVIDEND of FIVE PER CENT. (less income  
tax) on the paid-up capital on the shares of the Society, will be PAYABLE at this office,  
on and after Monday, the 30th day of August last.

INVALID LIVES.  
In addition to assurances on healthy lives, this Society continues to grant policies on  
the lives of persons more or less removed from the healthy standard, on the payment  
of a premium proportioned to the increased risk.

Further information can be obtained (free of expense) by addressing a line to  
GEO. H. PINCKARD, Resident Secretary,  
No. 99, Great Russell-street, Bloomsbury, London.

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98